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ABSTRACT

A national cross section of 2,502 adult Americans and owners or managers of 800 companies in the precision metalworking industry were surveyed to study public attitudes toward working in this industry and to explore recent recruiting and training practices in the precision metalworking field. The survey results indicated that Americans as a whole attached no stigma to industrial employment. Findings also suggested that the industry's best recruitment prospects continue to be from among those strata of society with incomes below $25,000 and with a high school education. To recruit students with college educations and/or from upper income households, the industry should appeal to America's esteem for specialized competence. Managers in precision metalworking, characterized as a recession-plagued industry, reported that they had cut employment of trainees, a cut that almost guarantees an inadequate supply of skilled employees when the economy recovers. These findings indicated a need for changes in industry and public policy to alleviate cyclical shortages of skilled labor and to ensure a growth of the skilled labor pool at a rate in line with the industry's long-term prospects. (The report contains 19 tables in the narrative section plus 43 appended supplemental tables with results of the surveys of both the public and the precision metalworking industry employers.) (YLB)

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Attitudes Toward the Skilled Trades:

Employment Issues in the Precision Metalworking Industry

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Conducted for
Sentry Insurance
On Behalf of the Task Force on the
Skilled Trades Shortage
By Louis Harris and Associates, Inc.

Project Director:
Merl W. Baker

November 1982

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Foreword

From Sentry

Over the past decade, Sentry Insurance has carried out several major public opinion studies worldwide as part of a continuing public affairs program. Attitudes Toward The Skilled Trades: Employment Issues In The Precision Metalworking Industry is our latest survey which provides new and important information on issues of concern to business and industry, government, media and the public at large.

Sentry commissioned Louis Harris & Associates to conduct this study because of our strong relationship with the precision metalworking industry. As a major insurer of metal fabrication companies across the United States, we recognize the importance of this market and share industry concerns.

The Harris survey represents our efforts with the Task Force on the Skilled Trades Shortage to examine the status of skilled metalworking jobs in America.

Sentry Insurance hopes the results of this study will provide some insights and bring a fresh perspective to some of the key issues surrounding skilled labor in the precision metalworking trades.

Foreword

From the Task Force on the Skilled Trades Shortage

About the Precision Metalworking Industry

The precision metalworking industry is a complex amalgam of manufacturing companies which are the keystone of American industrial production. This "industry of industries" is made up of approximately 32,000 companies employing approximately one million employees and producing $50 billion in sales annually. The individual companies are almost exclusively independently owned small businesses.

The companies in this industry design and build machine tools, special production tooling and component parts. Some of the companies are highly specialized, while others are more diversified. These companies usually work with metal but are not limited to any specific material. Materials range from ordinary steel to the most exotic alloys, as well as plastics, non-ferrous metals and non-metallic substances.

The industry manufactures and uses a wide variety of equipment and processes, including all machining operations on simple engine lathes and milling machines to complex numerically controlled machining centers, electrical discharge machines, electro-chemical milling machines, sonic grinders and lasers. Computers are regularly used as aids in design and manufacturing and in the control of machine operations.

Almost every product manufacturer does business at one time or another with the precision metalworking industry. Among the major customers of the industry are: automotive, appliance, aerospace, business machines, electronics, agricultural implements, ordnance, transportation, construction equipment and energy.

The highly refined skills of the innovative work force are a key factor despite the sophistication of the equipment used throughout the industry. The vast majority of workers in the industry are highly skilled craftspersons. These skilled people have learned their trade through a complex system of training and education known generally as apprenticeship. The various occupational skills employed throughout the industry characteristically involve extensive classroom and on-the-job training. Workers must constantly upgrade their skills, particularly in recent years with the rapid advance in new technology. The skilled craftsperson and the precision metalworking industry are truly the keystone of American productive capability.

To address the growing concern of maintaining an adequate supply of skilled people, segments within the precision metalworking industry joined together three years ago and formed the Task Force on the Skilled Trades Shortage. This task force is a broad coalition of national and local trade associations and societies representing special segments of the larger precision metalworking industry.

Various member-organizations of the task force participated in this special survey of the precision metalworking industry. Members of the task force are:

American Die Casting Institute
2340 Des Plaines Avenue
Des Plaines, IL 60018

American Machine Tool Distributors Association
4720 Montgomery Lane
Bethesda, MD 20814

American Metal Stamping Association
27027 Chardon Road
Richmond Heights, OH 44143

National Machine Tool Builders Association
7901 Westpark Drive
McLean, VA 22101

National Screw Machine Products Association
8700 West Snowville Road
Brecksville, OH 44141

National Tooling and Machining Association
9300 Livingston Road
Ft. Washington, MD 20744

The Society of Manufacturing Engineers
One SME Drive
Dearborn, MI 48128

The Society of the Plastics Industry, Inc.
3150 Des Plaines Avenue
Des Plaines, IL 60016

Tool and Die Institute
777 Busse Highway
Park Ridge, IL 60068

If you would like any additional information regarding this study or the task force, please contact one of the member-organizations listed above.

A Word About This Study.

This study of employment issues in the precision metalworking industry was commissioned by Sentry Insurance on behalf of the Task Force on the Skilled Trades Shortage, a coalition representing trade associations in the industry. It was designed to discern public attitudes toward working in the precision metalworking industry and to explore the recent recruiting and training practices of companies in the industry:

The public sample is a national cross section of 2,502 adult Americans (18 and older) interviewed by telephone between June 5 and June 17, 1982.

Companies in the industry are represented by a stratified random sample balanced for trade association membership and number of employees. One interview was conducted with either the owner or senior manager, or his designee at each of 800 companies. The interviews were conducted by telephone between June 2 and June 23, 1982. Copies of the questionnaires are available from Louis Harris and Associates, Inc., 630 Fifth Ave., New York, NY 10111.

While the responses of these managers are routinely described in this report as those of "the industry," these responses in fact are representative of the 7,461 companies that are members of the following trade associations:

American Die Casting Institute;

American Metal Stamping Association;

National Screw Machine Products Association;

National Tooling and Machining Association;

National Machine Tool Builders Association;

Society of the Plastics Industry;

Tool and Die Institute.

I. Executive Summary

America's ability to reassert its industrial prowess and rebuild its defense capabilities depends to a great extent on the adequacy of the nation's supply of skilled machinists and on the willingness of young Americans to enter the precision metalworking industry's training programs. This study was designed to test the adequacy of the supply of skilled employees in the precision metalworking industry in both the short and long terms and to explore the attitudes of all Americans toward working in industries such as precision metalworking.

The study demonstrates that the ups and downs of the business cycle almost guarantee shortages of skilled employees in the precision metalworking industry during periods of rising business volume. Because the recession forced a dramatic decline in the industry's employment of apprentices and trainees in the first half of 1982, and because of the lengthy training periods required to bring new skilled employees into the work force, this study shows that as the industry's business picks up in the future, the supply of skilled employees available to the precision metalworking industry will almost surely be inadequate.

The study reveals that while total plant employment in the industry dropped by just under 6% during the first half of 1982 in the face of recessionary pressure, the industry's employment of skilled journeymen and machine operators declined by only 4%, while the number of apprentices and trainees employed fell by fully 18%. Many companies in a downturn cut capital spending, research and development, and other current costs that carry little or no current payback. So too have the nation's independent precision metalworking shops substantially reduced their present employment of apprentices and trainees and, in the process, have reduced the future supply of skilled workers.

These employers appear fully cognizant of the implications of the decline in the industry's employment of apprentices and trainees – collectively, they would want to hire 36,000 more skilled employees than they think they could actually find if business were to return to the levels of 1977 and 1978. This figure represents approximately 12% of the industry's current employment of skilled journeymen and machine operators. Because this study is representative of only part of the precision metalworking industry, the overall skilled employee shortage for the entire industry could be substantially higher.

For companies in the industry, such cyclical shortages presumably mean foregoing some business when demand generated by customer industries is on the upswing. And shortages may also mean upward pressure on real wage rates for skilled employees during periods of increasing demand.

Cyclical shortages of skilled labor in the precision metalworking industry could also carry larger consequences as well. If, for example, the output of the entire U.S. precision metalworking industry (independent and captive shops) is constrained by shortages of skilled employees when business is good, it may mean that lead times for product delivery could be lengthened and product prices could be subject to upward pressure if wage rates increase. This may result in some work being contracted to vendors outside of the U.S. or in imports of machined products. To the extent that these problems can be demonstrated, some combination of changes in industry and public policies might be required.

Another key finding of this study is that the industry should be able to recruit a sufficient number of qualified apprentices and trainees – if it conscientiously sets out to tell the right story to the right people at the right time.

Indeed, recruiting issues do not loom large with companies that conduct structured training programs. These companies expect little difficulty in hiring as many trainees and apprentices as they would need if business were to pick up. The majority of employers in these companies say that the quality of their recent trainees and apprentices has not deteriorated compared with five years ago. Attrition in training programs, instead of being abnormally high, resembles the level of attrition in undergraduate programs in the nation's universities. As a rule, employers in the industry do not recruit aggressively – a majority of the companies that do conduct training programs do not regularly make presentations to high school students or teachers, or participate in career days or fairs directed to high school students.

This survey suggests that a more aggressive, more carefully targeted recruiting posture on the part of companies in the precision metalworking industry could yield rich rewards by delivering a larger pool of qualified candidates to the industry. There is no evidence in this study that Americans as a whole look down on industrial employment or necessarily consider it less worthwhile than other occupations. Indeed, there is every reason to believe that Americans look as favorably on skilled industrial employment as on any other occupation requiring similar levels of skill and training.

Americans, for example, tend to evaluate occupations in terms of the specialized competence required to carry out the job. Medical doctors are evaluated highly on every criterion tested – on perceived job satisfaction, job openings, security, prestige, and overall importance to society. Bank tellers and unskilled industrial workers, by contrast, are consistently ranked at the bottom on these criteria, while high school teachers rank closer to doctors, and skilled industrial workers fill in the middle ground. In assigning these rankings, Americans are focusing not on the work environment per se but on the perceived specialization of practitioners in each of these fields.

That said, however, it must also be noted that these perceptions vary widely depending on income and educational attainment. The standing of the skilled trades declines sharply among households with incomes exceeding $25,000 a year and drops significantly among those with a college education. To recruit successfully from these groups, the precision metalworking trade will clearly have to appeal to Americans' respect for job specialization and position itself as a much more demanding and rigorous occupation than it has in the past, emphasizing the length and the thoroughness of its training programs and the demands and rewards of the work experience itself.

Among those in society with whom the skilled trades have the best reputation – those with incomes below $25,000 and those for whom the highest educational attainment is high school – such a strategy will also help attract the most qualified candidates from this pool to the industry's training and apprenticeship programs. But if these groups look favorably on the skilled trades as an occupation, they also demonstrate an unusually high concern for their own health and physical safety on the job – ranking this more important than job satisfaction, job security, and a good income. All Americans, by contrast, rank job satisfaction above personal health and safety as important in a job. This critical difference in the outlook of those groups that view the skilled trades most favorably goes a long way toward explaining why many of these groups evaluate the work of electricians more positively than skilled industrial work. Industrial work, for members of these groups, appears to pose more health and safety risks than other skilled trades. Work environment is an issue in that factories are less appealing than other environments to people for whom the most important aspect of a job is that it provides safe and healthy working conditions.

Conclusion

This study set out to explore two of the basic concerns of the Task Force on the Skilled Trades Shortage: the adequacy of the supply of skilled labor in the precision metalworking industry and Americans' attitudes toward working in industries such as precision metalworking. The findings reveal that:

The ups and downs of the business cycle almost guarantee shortages of skilled employees in the precision metalworking industry during periods of rising business volume.

As the industry's business picks up in the future, the supply of skilled employees available to the precision metalworking industry will almost surely be inadequate.

Changes in both industry and public policy may be required to alleviate cyclical shortages of skilled labor and to ensure an orderly growth of the skilled labor pool at a rate in line with the long term prospects of the industry.

From a recruiting aspect, these findings also offer important information for the Task Force. Americans, for example, attach no stigma to industrial employment, even as the economy is increasingly dominated by service industries. Therefore, a recruiting posture by the precision metalworking industry that attempts only to improve the "image" of industrial employment by pointing to its intrinsic importance or worth is likely to be less effective than an emphasis on the demands and challenges of precision metalworking employment. The recruiting priority for the industry is to persuade candidates that the precision metalworking trade is itself a highly specialized occupation, demanding rigorous training and providing rich rewards in terms of job satisfaction and security. In its recruiting efforts, the industry can and should appeal to Americans' esteem for specialized competence. This should improve the quality of the candidate pool and give the precision metalworking industry recuiting leverage with upper income and better educated groups, leverage that it now lacks. In order to appeal to those with lower incomes and with less education, the industry must also demonstrate to candidates that working conditions in the industry are safe and healthy.

The precision metalworking industry clearly relies on highly skilled journeymen. If the industry is to ensure an adequate supply of qualified apprentices and trainees, it must be willing to recruit them and recruit them more aggressively. The industry must also provide its apprentices and trainees with some assurances of job security in the face of periodic slowdowns. Combined with appropriate changes in public policy, such measures could go a long way toward relieving the cyclical skilled labor shortages the precision metalworking industry now faces.

II. Americans Look at Precision Metal-working as a Career

How do Americans feel about an industry defined for them as "skilled tool and die (making), precision (machining), or something like that"?

> By 75-21% Americans agree that "the good part of a job like precision metalworking is that you can regularly see what your work is producing – and that's an experience not many working people have these days."

> By 52-45% Americans disagree that "the way things are going in America, people doing blue collar work such as precision metalworking will not be as respected as others holding skilled white collar and other executive jobs."

Yet only 17% of those Americans who are working, have worked, or plan to work have ever considered precision metalworking as a career. And only 12% of the nation's parents with children 17 years old or younger have considered encouraging their children to pursue a career in the industry.

This survey was designed to determine the attitudinal barriers the precision metalworking industry would need to overcome in order to most effectively recruit promising candidates for apprentice and trainee positions. While the findings suggest a number of ways the industry can reposition itself to recruit good candidates, the survey reveals few, if any, attitudinal barriers that have to be dealt with. Far from being a subtle issue, the problem the industry has experienced with recruiting instead is one of the most straightforward – the companies in the industry simply haven't been hustling for recruits where it counts – in the nation's high schools.

Attitudes Toward Various Occupations

In terms of such intangible criteria as the overall importance to society of various jobs, the prestige associated with various jobs, and the personal satisfaction one gets from performing various jobs, Americans consistently rank occupations by the level of skill or specialized competence required to carry them out.

When they are asked to evaluate six occupations on the basis of the overall importance of each to society, for example, the public predictably attaches the highest rating to the medical profession, with 86% of the American people calling it very important (Table 1). Yet, close behind come public high school teachers (81%), skilled industrial workers (73%), and electricians (67%). The real falloff comes with unskilled industrial workers (44%) and bank tellers (37%).

Table 1 **How the Public Rates Various Jobs: The Job's Overall Importance to Society**

Q.: Now I would like to ask you about different kinds of jobs people have. Thinking broadly about their overall importance to society, would you say that (READ EACH ITEM) are very important, somewhat important, not very important, or not important at all?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEDICAL DOCTORS															
VERY IMPORTANT	86	87	83	82	89	91	83	88	91	89	81	93	86	86	83
SOMEWHAT IMPORTANT	13	12	15	17	10	7	15	11	7	10	17	6	12	12	16
NOT VERY IMPORTANT	1	1	1	1	1	*	1	1	1	1	1	1	1	1	1
NOT IMPORTANT AT ALL	*	1	–	1	–	1	1	*	–	*	*	–	–	*	1
NOT SURE	*	–	*	*	*	1	*	–	1	*	*	*	*	*	*
PUBLIC HIGH SCHOOL TEACHERS															
VERY IMPORTANT	81	79	75	81	84	86	78	84	86	82	79	85	80	83	78
SOMEWHAT IMPORTANT	15	17	22	16	14	9	18	13	11	13	18	11	16	15	18
NOT VERY IMPORTANT	3	3	2	2	1	4	3	2	3	3	2	3	3	3	2
NOT IMPORTANT AT ALL	1	1	1	1	1	–	1	*	–	1	*	1	*	*	1
NOT SURE	*	–	–	*	1	1	1	*	1	1	*	*	1	–	1
SKILLED INDUSTRIAL WORKERS															
VERY IMPORTANT	73	60	65	73	79	84	72	73	84	76	67	76	76	71	70
SOMEWHAT IMPORTANT	25	38	31	24	19	14	25	24	12	21	30	21	23	27	27
NOT VERY IMPORTANT	*	*	–	*	*	1	*	*	1	*	*	1	–	*	*
NOT IMPORTANT AT ALL	2	1	3	2	1	1	2	1	1	2	2	2	1	1	2
NOT SURE	1	1	1	*	1	–	*	1	2	*	1	*	*	*	1

(Continued)

Table 1 (Continued) **How the Public Rates Various Jobs: The Job's Overall Importance to Society**

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ELECTRICIANS															
VERY IMPORTANT	67	61	56	61	74	83	59	73	92	75	53	81	71	68	55
SOMEWHAT IMPORTANT	30	36	40	36	22	15	36	25	6	23	43	15	27	28	41
NOT VERY IMPORTANT	3	3	4	2	3	2	4	2	1	2	3	3	2	3	3
NOT IMPORTANT AT ALL	*	*	–	*	–	–	*	–	–	*	*	–	–	–	*
NOT SURE	*	*	–	*	*	*	1	*	1	–	*	*	–	*	1
UNSKILLED INDUSTRIAL WORKERS															
VERY IMPORTANT	44	34	33	46	52	49	40	48	57	45	41	44	48	45	41
SOMEWHAT IMPORTANT	41	46	49	41	36	34	44	38	27	40	44	39	37	42	44
NOT VERY IMPORTANT	11	15	15	10	9	9	13	9	6	10	13	11	11	9	12
NOT IMPORTANT AT ALL	2	3	3	2	2	4	2	3	5	3	1	5	1	2	2
NOT SURE	2	1	*	1	2	4	1	2	4	2	1	1	3	1	1
BANK TELLERS															
VERY IMPORTANT	37	26	26	31	45	56	28	44	60	43	26	54	39	36	27
SOMEWHAT IMPORTANT	44	51	48	50	40	31	46	43	23	42	51	33	45	46	49
NOT VERY IMPORTANT	16	21	22	16	13	9	22	10	9	12	20	9	14	15	20
NOT IMPORTANT AT ALL	3	2	4	3	2	3	4	2	5	2	3	3	1	2	4
NOT SURE	1	–	–	1	1	2	1	1	3	1	*	*	*	*	1

*LESS THAN 0.5%.

A similar pattern emerges in the public's evaluation of the prestige associated with various jobs. Doctors are ranked first, with 75% of the American people associating a great deal of prestige with medical practice (Table 2). But the other skilled professions tested cluster together – public high school teachers (20%), skilled industrial workers (19%), and electricians (17%). Again, the falloff comes with the unskilled trades, with bank tellers perceived as having a great deal of prestige by only 12% of the population and unskilled industrial workers by only 6%.

Table 2 **How the Public Rates Various Jobs: The Prestige Associated With the Job**

Q.: How about the prestige associated with different jobs? Would you say that (READ EACH ITEM) enjoy a great deal of prestige, some prestige, only a little prestige, or practically no prestige at all?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEDICAL DOCTORS															
A GREAT DEAL OF PRESTIGE	75	76	81	80	71	66	76	74	51	71	83	66	72	77	82
SOME PRESTIGE	19	17	16	15	23	23	18	19	29	21	14	22	22	19	14
ONLY A LITTLE PRESTIGE	3	4	1	3	3	5	3	3	5	4	1	5	3	2	3
PRACTICALLY NO PRESTIGE AT ALL	1	2	1	1	1	2	1	1	3	1	1	2	1	1	1
NOT SURE	2	1	1	1	2	5	1	3	13	2	*	5	2	1	1
PUBLIC HIGH SCHOOL TEACHERS															
A GREAT DEAL OF PRESTIGE	20	16	17	16	23	33	20	21	32	25	14	31	22	21	16
SOME PRESTIGE	47	46	46	48	50	42	48	46	34	46	50	40	46	45	50
ONLY A LITTLE PRESTIGE	24	26	27	27	21	15	24	23	14	21	28	17	21	26	26
PRACTICALLY NO PRESTIGE AT ALL	7	12	10	9	4	3	7	8	6	7	9	6	8	8	7
NOT SURE	2	1	1	1	2	6	1	3	14	1	*	6	2	*	1
SKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF PRESTIGE	19	18	13	14	20	31	20	18	33	23	11	27	22	21	12
SOME PRESTIGE	53	48	51	58	56	47	53	53	39	53	55	45	52	52	58
ONLY A LITTLE PRESTIGE	21	28	28	22	17	12	21	22	10	18	26	18	19	21	24
PRACTICALLY NO PRESTIGE AT ALL	5	5	7	6	5	3	5	5	6	4	6	4	5	5	6
NOT SURE	2	1	1	1	2	6	1	3	12	2	1	6	2	1	1
ELECTRICIANS															
A GREAT DEAL OF PRESTIGE	17	14	13	12	18	29	16	17	38	20	10	27	22	16	11
SOME PRESTIGE	49	50	48	51	48	43	48	50	36	48	51	43	47	53	50
ONLY A LITTLE PRESTIGE	25	25	30	27	26	16	28	23	6	23	31	16	20	24	31
PRACTICALLY NO PRESTIGE AT ALL	7	9	7	7	5	4	6	7	5	6	7	8	8	6	7
NOT SURE	3	1	1	2	3	8	2	3	14	3	1	6	3	1	1
BANK TELLERS															
A GREAT DEAL OF PRESTIGE	12	10	8	9	14	21	11	13	32	16	5	20	14	14	6
SOME PRESTIGE	38	36	35	36	41	44	34	41	38	40	35	40	43	38	34
ONLY A LITTLE PRESTIGE	32	36	33	35	31	22	36	29	13	29	38	24	26	35	37
PRACTICALLY NO PRESTIGE AT ALL	15	17	23	18	12	7	17	14	5	12	21	10	13	12	22
NOT SURE	3	1	1	2	2	6	2	3	11	3	1	6	3	1	1
UNSKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF PRESTIGE	6	6	5	4	7	8	5	6	19	8	2	11	8	4	3
SOME PRESTIGE	23	26	16	20	25	30	22	24	34	27	18	31	25	26	18
ONLY A LITTLE PRESTIGE	32	33	32	30	36	34	33	32	21	32	34	29	30	35	34
PRACTICALLY NO PRESTIGE AT ALL	36	34	47	45	31	23	38	35	16	32	45	24	33	35	45
NOT SURE	2	1	1	1	2	5	1	2	10	2	1	5	3	*	1

*LESS THAN 0.5%.

Finally, in terms of the personal satisfaction one gets in performing each of these types of jobs, doctors again top the list, with 67% of the American people saying that doctors get a great deal of satisfaction from their work (Table 3). Again, other specialized skills cluster together, with public high school teachers at 34%, electricians at 29%, and skilled industrial workers at 28%. The unskilled trades are at the bottom of the list, with only 15% who associate a great deal of personal satisfaction with being a bank teller and 9% with being an unskilled industrial worker.

Table 3 **How the Public Rates Various Jobs: The Satisfaction One Gets From a Job**

Q.: In terms of the personal satisfaction a person gets in performing his or her job, would you say that (READ EACH ITEM) get a great deal of personal satisfaction, some satisfaction, not very much satisfaction, or practically no personal satisfaction at all?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEDICAL DOCTORS															
A GREAT DEAL OF SATISFACTION	67	68	64	67	69	68	67	68	67	68	67	70	64	67	69
SOME SATISFACTION	29	29	32	30	28	26	29	29	27	28	30	27	30	29	28
NOT VERY MUCH SATISFACTION	3	1	2	2	2	1	2	2	2	2	2	1	3	2	2
PRACTICALLY NO SATISFACTION AT ALL	1	1	2	*	1	*	1	1	1	1	1	1	*	2	1
NOT SURE	1	1	*	1	1	4	1	1	4	1	1	2	3	1	*
PUBLIC HIGH SCHOOL TEACHERS															
A GREAT DEAL OF SATISFACTION	34	38	26	30	35	43	36	33	40	34	33	38	33	34	33
SOME SATISFACTION	49	44	56	53	50	41	50	49	43	49	51	46	49	49	52
NOT VERY MUCH SATISFACTION	11	14	13	10	10	8	10	12	7	11	12	10	12	11	11
PRACTICALLY NO SATISFACTION AT ALL	4	4	4	4	3	2	3	4	5	4	3	3	4	4	4
NOT SURE	2	–	*	2	1	6	2	2	6	2	1	2	2	2	1
ELECTRICIANS															
A GREAT DEAL OF SATISFACTION	29	26	21	24	32	42	28	29	46	32	22	39	29	30	22
SOME SATISFACTION	59	59	65	64	57	47	59	59	41	56	65	52	58	56	65
NOT VERY MUCH SATISFACTION	8	10	10	9	6	3	9	7	5	7	9	4	7	9	10
PRACTICALLY NO SATISFACTION AT ALL	3	3	3	2	2	3	2	3	3	3	2	3	2	3	2
NOT SURE	2	2	1	1	2	4	2	2	5	2	2	3	3	1	1
SKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF SATISFACTION	28	22	23	22	33	44	30	27	36	34	21	38	29	30	22
SOME SATISFACTION	57	60	60	63	56	43	56	58	48	53	63	48	55	55	64
NOT VERY MUCH SATISFACTION	10	14	13	12	6	5	10	10	6	9	12	8	11	11	11
PRACTICALLY NO SATISFACTION AT ALL	2	3	3	2	2	2	2	2	5	2	2	3	2	3	2
NOT SURE	2	1	1	1	3	5	2	3	6	2	2	3	2	1	1

(Continued)

Table 3 (Continued) **How the Public Rates Various Jobs: The Satisfaction One Gets From a Job**

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
BANK TELLERS															
A GREAT DEAL OF SATISFACTION	15	10	7	11	20	29	15	16	40	19	7	29	16	16	9
SOME SATISFACTION	49	47	47	51	50	48	47	52	42	52	48	46	52	51	47
NOT VERY MUCH SATISFACTION	24	31	31	26	21	12	27	22	9	20	32	17	22	24	31
PRACTICALLY NO SATISFACTION AT ALL	9	10	15	9	6	4	10	8	3	7	11	5	8	8	11
NOT SURE	2	1	*	2	1	7	2	3	6	2	2	3	2	1	1
UNSKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF SATISFACTION	9	6	3	7	11	14	8	9	21	11	4	16	9	8	5
SOME SATISFACTION	37	37	36	32	42	40	37	36	40	41	31	40	36	43	32
NOT VERY MUCH SATISFACTION	29	30	29	32	28	24	29	28	19	26	34	25	30	25	34
PRACTICALLY NO SATISFACTION AT ALL	24	26	31	28	18	14	25	23	12	20	29	15	22	22	29
NOT SURE	2	1	1	2	2	8	2	3	9	2	2	3	3	2	1

*LESS THAN 0.5%.

What's interesting about these rankings is the consistency with which medical doctors (who typically have more than ten years of post-secondary school training) outrank high school teachers (who typically have about six years of post-secondary school training), who in turn outrank skilled industrial workers and electricians (up to four years of training), who in turn outrank bank tellers and unskilled industrial workers (little or no training at all). Americans are clearly more impressed with specialized competence and skill than with other factors. And the work environment itself has little to do with how the public looks at jobs – evaluations accorded white-collar (but unskilled) bank tellers consistently fall short of the evaluations accorded blue-collar (but skilled) industrial workers and electricians.

In terms of more tangible measures of comparison, skilled industrial work is relatively well perceived in terms of employment opportunities over the next few years but is not so well perceived in terms of job security. Nonetheless, skilled industrial work shapes up well in terms of the income it offers.

For example, 28% of the American people think there will be a great many openings for skilled industrial workers over the next few years, compared with 27% who feel this way about electricians, 16% about public high school teachers, 13% about bank tellers, and 11% about unskilled industrial workers (Table 4). Doctors, not surprisingly, are seen by nearly half (41%) of the American public as a profession offering a great many job opportunities in the next few years, notwithstanding an emerging body of literature that points to a surplus of physicians.

Table 4 **How the Public Rates Various Jobs: The Number of Job Openings Over the Next Few Years**

Q.: Thinking about job openings in the next few years for (READ EACH ITEM), do you think there will be a great many openings, some openings, only a few openings, or practically no openings at all?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEDICAL DOCTORS															
A GREAT MANY OPENINGS	41	34	35	39	46	50	42	40	44	44	37	47	41	42	38
SOME OPENINGS	35	38	39	37	33	27	33	36	21	31	41	27	37	33	38
ONLY A FEW OPENINGS	18	22	19	18	14	15	18	17	22	18	16	18	16	19	18
PRACTICALLY NO OPENINGS AT ALL	4	5	5	4	3	2	4	4	5	4	3	4	3	4	4
NOT SURE	3	2	2	2	4	6	3	3	8	3	2	3	4	1	2
SKILLED INDUSTRIAL WORKERS															
A GREAT MANY OPENINGS	28	18	18	26	34	43	32	24	35	27	27	25	28	26	29
SOME OPENINGS	41	42	46	43	41	32	39	43	26	38	46	34	39	42	44
ONLY A FEW OPENINGS	24	32	31	25	20	16	23	25	27	26	22	28	25	26	23
PRACTICALLY NO OPENINGS AT ALL	5	6	5	5	4	4	5	4	7	6	3	9	4	5	4
NOT SURE	2	1	*	2	2	6	1	3	5	2	2	4	3	1	1
ELECTRICIANS															
A GREAT MANY OPENINGS	27	25	21	22	32	37	27	27	37	28	25	36	27	27	22
SOME OPENINGS	40	35	42	46	38	35	41	40	25	38	45	25	40	40	46
ONLY A FEW OPENINGS	26	33	31	25	24	20	26	26	28	28	24	30	26	26	25
PRACTICALLY NO OPENINGS AT ALL	4	5	6	5	2	3	4	4	7	4	3	4	3	5	4
NOT SURE	3	1	–	2	4	5	2	4	4	3	2	4	3	1	2
PUBLIC HIGH SCHOOL TEACHERS															
A GREAT MANY OPENINGS	16	9	14	13	20	26	16	16	26	17	13	17	17	17	14
SOME OPENINGS	35	29	34	37	35	39	35	35	22	35	37	32	35	34	36
ONLY A FEW OPENINGS	36	44	38	36	35	25	36	36	37	35	37	40	34	36	36
PRACTICALLY NO OPENINGS AT ALL	11	17	14	12	7	5	11	11	8	11	12	8	11	11	12
NOT SURE	2	1	*	1	3	5	2	2	7	2	1	2	3	2	1

(Continued)

Table 4 (Continued) **How the Public Rates Various Jobs: The Number of Job Openings Over the Next Few Years**

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
BANK TELLERS															
A GREAT MANY OPENINGS	13	11	12	10	14	20	12	14	19	13	12	18	14	12	11
SOME OPENINGS	39	36	39	41	39	39	40	39	32	36	44	32	41	37	42
ONLY A FEW OPENINGS	36	40	39	36	33	32	36	36	34	38	34	34	35	39	36
PRACTICALLY NO OPENINGS AT ALL	9	11	10	10	10	3	9	9	7	10	8	11	5	10	9
NOT SURE	3	1	1	2	4	6	2	4	7	3	2	5	4	2	2
UNSKILLED INDUSTRIAL WORKERS															
A GREAT MANY OPENINGS	11	8	11	9	13	15	12	10	14	12	10	13	11	11	11
SOME OPENINGS	28	25	22	28	32	32	29	28	26	27	30	24	30	29	28
ONLY A FEW OPENINGS	41	40	44	43	39	38	40	41	39	41	42	41	38	41	43
PRACTICALLY NO OPENINGS AT ALL	17	26	23	18	12	9	16	18	14	19	16	19	18	17	18
NOT SURE	2	1	–	2	3	6	2	3	7	2	2	3	3	2	1

*LESS THAN 0.5%.

But if the outlook for skilled industrial employment is seen as sound over the long term, the current recession has clearly taken its toll on the perception of job security for these workers in the short term. Only 19% of the public say skilled industrial work offers a great deal of job security, ahead of bank tellers (18%) and unskilled industrial workers (4%), but significantly behind public high school teachers (27%), electricians (31%), and medical doctors (85%) (Table 5).

Table 5 **How the Public Rates Various Jobs: Job Security**

Q.: Thinking about job security, or the freedom from frequent and prolonged layoffs, how much job security do you think (READ EACH ITEM) have – a great deal of job security, some job security, not very much job security, or practically no job security at all?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
MEDICAL DOCTORS															
A GREAT DEAL OF JOB SECURITY	85	84	86	87	87	79	88	83	70	84	88	76	83	88	90
SOME JOB SECURITY	11	13	11	10	10	14	9	13	21	12	9	18	12	9	8
NOT VERY MUCH JOB SECURITY	2	1	2	2	2	*	2	1	1	2	2	2	2	2	1
PRACTICALLY NO JOB SECURITY AT ALL	1	1	*	1	1	2	1	1	4	1	1	3	1	1	1
NOT SURE	1	–	–	*	1	5	1	1	5	1	*	2	2	*	*

(Continued)

Table 5 (Continued) **How the Public Rates Various Jobs: Job Security**

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ELECTRICIANS															
A GREAT DEAL OF JOB SECURITY	31	29	28	29	35	34	31	31	43	31	28	36	31	29	30
SOME JOB SECURITY	54	56	55	57	52	48	54	55	36	55	56	49	54	56	56
NOT VERY MUCH JOB SECURITY	10	11	13	11	10	9	11	10	11	9	12	8	11	11	11
PRACTICALLY NO JOB SECURITY AT ALL	3	4	4	3	2	3	3	3	5	3	2	3	2	4	2
NOT SURE	2	1	*	1	1	6	1	2	5	1	1	3	1	1	1
PUBLIC HIGH SCHOOL TEACHERS															
A GREAT DEAL OF JOB SECURITY	27	14	20	26	35	37	30	24	33	26	26	26	19	25	31
SOME JOB SECURITY	50	54	51	53	48	44	50	50	43	50	51	44	56	49	52
NOT VERY MUCH JOB SECURITY	17	24	21	17	13	12	14	20	13	17	17	22	17	20	14
PRACTICALLY NO JOB SECURITY AT ALL	5	8	8	4	3	3	5	5	7	5	4	5	6	6	3
NOT SURE	1	1	*	*	1	4	1	2	3	1	1	3	2	1	*
SKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF JOB SECURITY	19	14	16	14	22	30	21	17	31	21	15	28	20	16	15
SOME JOB SECURITY	58	58	60	61	58	52	60	57	42	59	61	44	58	61	63
NOT VERY MUCH JOB SECURITY	17	21	19	18	15	11	14	19	15	15	19	16	16	17	17
PRACTICALLY NO JOB SECURITY AT ALL	5	6	5	6	4	3	4	5	6	5	5	7	4	6	4
NOT SURE	1	1	–	1	1	5	1	2	6	1	1	5	1	*	*
BANK TELLERS															
A GREAT DEAL OF JOB SECURITY	18	15	11	17	21	22	18	18	28	19	14	22	17	18	16
SOME JOB SECURITY	52	55	52	52	51	50	51	53	46	53	53	49	55	52	51
NOT VERY MUCH JOB SECURITY	21	20	26	23	19	15	22	20	16	19	24	18	19	22	24
PRACTICALLY NO JOB SECURITY AT ALL	8	9	11	7	7	6	8	7	6	7	8	7	7	8	8
NOT SURE	2	1	*	1	1	7	1	2	4	2	1	4	2	*	1
UNSKILLED INDUSTRIAL WORKERS															
A GREAT DEAL OF JOB SECURITY	4	3	2	2	4	6	3	4	11	4	2	8	3	2	3
SOME JOB SECURITY	21	19	13	18	25	30	22	21	32	24	17	26	25	22	17
NOT VERY MUCH JOB SECURITY	37	33	37	37	41	37	38	37	32	35	40	32	34	40	38
PRACTICALLY NO JOB SECURITY AT ALL	36	44	47	42	28	21	37	36	21	35	41	32	37	35	42
NOT SURE	1	1	–	*	1	5	1	2	4	2	1	2	1	1	1

*LESS THAN 0.5%.

Security issues notwithstanding, Americans evaluate skilled industrial employment positively on the income it offers. At $24,800 a year, the public's mean estimate of a skilled industrial worker's income exceeds that of high school teachers ($18,800), bank tellers ($16,000), and unskilled industrial workers ($15,100), and is only slightly below that ascribed to electricians ($27,900) (Table 6). Doctors, for comparison, weigh in at a hefty $84,200 a year. And the public's perception of the income of skilled industrial workers is only slightly lower than the $27,300 a year median household income for people who have attended or graduated college reported by the U.S. Census Bureau for 1980. Interestingly, the perceived income of skilled industrial workers is highest ($30,500 a year) among people with the very lowest incomes ($7,500 a year or less) and levels out at $25,200 a year among people making more than $25,000 a year themselves.

Table 6 **How the Public Rates Various Jobs: Wages (Means, in Thousands of Dollars)**

Q.: How much would you say the typical (READ EACH ITEM) in this country makes in a year before taxes – assuming he or she is fully employed all year?

		Age					Sex		Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
MEDICAL DOCTOR	84.2	60.5	69.9	89.5	100.7	90.3	85.9	82.3	86.9	84.6	83.6	81.5	74.8	80.9	88.2
ELECTRICIAN	27.9	24.9	26.3	27.2	29.4	33.8	26.9	29.0	30.1	28.8	26.8	32.2	25.6	26.9	28.3
SKILLED INDUSTRIAL WORKER	24.8	22.6	22.6	23.6	24.9	33.4	24.2	25.5	27.7	26.0	23.3	30.5	22.0	23.2	25.2
PUBLIC HIGH SCHOOL TEACHER	18.8	17.2	17.8	19.0	19.7	20.5	18.7	19.0	20.9	18.9	18.6	19.2	17.1	18.9	19.4
BANK TELLER	16.0	15.5	13.8	14.9	16.4	21.8	15.1	17.0	18.1	17.5	14.4	23.2	14.4	15.3	15.3
UNSKILLED INDUSTRIAL WORKER	15.1	15.6	14.6	15.4	14.4	15.2	15.1	15.0	17.5	15.1	14.9	14.3	14.4	14.7	15.6

Americans, in short, don't "look down" on industrial employment per se. To be sure, they have their doubts about the job security industrial work offers (not without good reason in view of today's unemployment rate). But compared with the decline in the employment of apprentices and trainees, the relatively modest decline in the employment of skilled workers in the precision metalworking industry over the last six months (described in Chapter III) suggests that the industry can easily address these doubts. The greater challenge is to appeal to Americans' respect for specialized competence by demonstrating to candidates considering precision metalworking as a career that it takes rigorous training to develop the special skills the industry requires.

Focusing on the Best Prospects

Where should the precision metalworking industry be concentrating its recruiting efforts? Among which groups in society is the industry's reputation the best? Where can the industry get the best results for its recruiting dollars?

The short answer is that the industry's best prospects continue to be among those strata of society that have traditionally provided its trainees and apprentices – those for whom the highest educational achievement is high school and in which income is $25,000 a year or less. The reputation of the skilled trades (skilled industrial workers and electricians) is higher among these groups than it is with the population as a whole. The reputation of the skilled trades among those with higher incomes and a college education, in contrast, is significantly less positive than it is among all Americans.

A few examples are instructive. Sixty-seven percent of all Americans say doctors enjoy a great deal of job satisfaction, which includes 67% of eighth grade graduates, 67% of the college educated, 70% of those earning $7,500 a year or less, and 69% of those earning $25,001 a year or more. In short, a consistently high evaluation among all groups. But while electricians are seen as having a great deal of job satisfaction by 29% of all Americans, this includes 46% of eighth grade graduates but only 22% of the college educated, and 39% of those earning $7,500 a year or less but only 22% of those earning $25,000 a year or more. And while skilled industrial workers are said to enjoy a great deal of job satisfaction by 28% of the American public, similar schisms are evident among the subgroups – 36% among eighth grade graduates but 21% among the college educated, and 38% among those earning $7,500 a year or less but 22% among those earning $25,001 a year or more. For all the criteria tested, the skilled trades are consistently evaluated more favorably by lower income and lower education groups and less favorably by higher education and higher income groups.

A similar pattern emerges among those Americans who are working, have worked, or plan to work. While 17% of this group have considered a career in precision metalworking, this includes 22% of eighth grade graduates, 21% of those who have attended or graduated high school (but only 12% of the college educated), 21% of those earning $7,500 a year or less, and 19% of those earning $15,001 to $25,000 a year (but only 15% of those earning $25,001 a year or more) (Table 7). And while 12% of the nation's parents with children 17 or younger have considered encouraging their children to pursue a career in precision metalworking, this includes 24% of eighth grade graduates, 14% of those who have attended or graduated high school (but only 8% of the college educated), 21% of those earning $7,500 a year or less, and 14% of those earning between $7,501 and 25,000 a year (but only 9% of those earning more than $25,000) (Table S3).

Table 7 **Whether a Precision Metalworking Career has Been Considered**
Base: Have Worked or Plan to Work

Q.: Have you ever considered a career in the precision metalworking industry as a skilled tool and die maker, precision machinist, or something like that, or haven't you?

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2357	404	300	930	449	258	120	1134	1098	241	406	622	909
	%	%	%	%	%	%	%	%	%	%	%	%	%
HAVE CONSIDERED	17	19	20	16	16	14	22	21	12	21	16	19	15
HAVE NOT CONSIDERED	82	80	79	84	84	85	75	78	87	78	84	80	85
NOT SURE	1	1	*	*	1	1	3	*	1	1	*	1	*

*LESS THAN 0.5%.

Identifying these prospect groups for recruitment is important, because their outlook on industrial work turns out to vary in several important ways from the attitudes of the population as a whole.

Attitudes Toward Industrial Employment

Throughout the profile of all Americans, electricians and skilled industrial workers run neck and neck for positive evaluations on all of the criteria tested, with the notable exception of job security, on which electricians are rated substantially better. The comparison is useful because skilled industrial workers and electricians undergo roughly similar training and apprenticeship programs and possess roughly equal skills. However, among many of the best prospects, electricians are more favorably perceived than are skilled industrial workers. On those employment aspects for which all Americans view the work of electricians more favorably than skilled industrial work (job satisfaction, security, and income), these best prospects follow suit. But in the three areas for which all Americans view skilled industrial work more favorably than the work of electricians (importance to society, job openings, prestige), several of these best prospect groups reverse the ranking, evaluating electricians more favorably (Table 8).

Consider the issue of overall importance to society. Seventy-three percent of all Americans consider skilled industrial work to be very important to society, comfortably ahead of the 67% who consider electricians to be very important. But among those with an eighth grade education, electricians are considered to be very important by 92% and skilled industrial workers by only 84%. A similar pattern holds among those households earning $7,500 a year or less, where 81% see electricians as very important, and only 76% opt for skilled industrial work.

Similarly, on the number of job openings in the next few years, Americans narrowly rank skilled industrial work ahead of electricians. But 37% of those with an eighth grade education see a great many openings for electricians in the next few years (versus 35% for skilled industrial workers), and 28% of those who have attended or graduated high school join them (versus 27% for skilled industrial work). The ranks of those seeing a great many openings for electricians also include 36% of households making $7,500 a year or less (versus 25% for skilled industrial work).

Table 8 **The Reputation of the Skilled Trades With Various Groups in Society**

Q.: Now I would like to ask you about different kinds of jobs people have. Thinking broadly about their overall importance to society, would you say that (READ EACH ITEM) are very important, somewhat important, not very important, or not important at all?

Q.: Thinking about job openings in the next few years for (READ EACH ITEM), do you think there will be a great many openings, some openings, only a few openings, or practically no openings at all?

Q.: How about the prestige associated with different jobs? Would you say that (READ EACH ITEM) enjoy a great deal of prestige, some prestige, only a little prestige, or practically no prestige at all?

Q.: In terms of the personal satisfaction a person gets in performing his or her job, would you say that (READ EACH ITEM) get a great deal of personal satisfaction, some satisfaction, not very much satisfaction, or practically no personal satisfaction at all?

Q.: Thinking about job security, or the freedom from frequent and prolonged layoffs, how much job security do you think (READ EACH ITEM) have – a great deal of job security, some job security, not very much job security, or practically no job security at all?

Q.: How much would you say the typical (READ EACH ITEM) in this country makes in a year before taxes – assuming he or she is fully employed all year?

			Age					Sex		Education			Income			
		Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE		2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ATTRIBUTE	TRADE															
VERY IMPORTANT TO SOCIETY	SKILLED INDUSTRIAL WORKERS	73	60	65	73	79	84	72	73	84	76	67	76	76	71	70
	ELECTRICIANS	67	61	56	61	74	83	59	73	92	75	53	81	71	68	55
A GREAT MANY JOB OPENINGS	SKILLED INDUSTRIAL WORKERS	28	18	18	26	34	43	32	24	35	27	27	25	28	26	29
	ELECTRICIANS	27	25	21	22	32	37	27	27	37	28	25	36	27	27	22
A GREAT DEAL OF PRESTIGE	SKILLED INDUSTRIAL WORKERS	19	18	13	14	20	31	20	18	33	23	11	27	22	21	12
	ELECTRICIANS	17	14	13	12	18	29	16	17	38	20	10	27	22	16	11
A GREAT DEAL OF PERSONAL SATISFACTION	SKILLED INDUSTRIAL WORKERS	28	22	23	22	33	44	30	27	36	34	21	38	29	30	22
	ELECTRICIANS	29	26	21	24	32	42	28	29	46	32	22	39	29	30	22
A GREAT DEAL OF JOB SECURITY	SKILLED INDUSTRIAL WORKERS	19	14	16	14	22	30	21	17	31	21	15	28	20	16	15
	ELECTRICIANS	31	29	28	29	35	34	31	31	43	31	28	36	31	29	30

(Continued)

Table 8 (Continued) **The Reputation of the Skilled Trades With Various Groups in Society**

			Age					Sex		Education			Income			
		Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	Male	Female	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE		2502	412	310	963	489	310	1215	1287	147	1223	1125	272	431	658	934
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ATTRIBUTE	TRADE															
AVERAGE ANNUAL INCOME (MEAN, IN THOUSANDS OF DOLLARS)	SKILLED INDUSTRIAL WORKERS	24.8	22.6	22.6	23.6	24.9	33.4	24.2	25.5	27.7	26.0	23.3	30.5	22.0	23.2	25.2
	ELECTRICIANS	27.9	24.9	26.3	27.2	29.4	33.8	26.9	29.0	30.1	28.8	26.8	32.2	25.6	26.9	28.3

On the less tangible issue of the prestige associated with the two occupations, Americans rate skilled industrial work (19% a great deal of prestige, 53% some prestige) slightly ahead of electricians (17% a great deal of prestige, 49% some prestige). Yet even this evaluation is reversed among those with less education, with 38% of eighth grade graduates crediting electricians with a great deal of prestige (versus 33% for skilled industrial work).

The long and short of this evidence is that among many of those groups in society that are most likely to provide precision metalworkers, being an electrician is a more attractive option.

What Americans Look for in a Job

Why should the best prospects – those with less education and lower incomes – look more favorably on electricians than on skilled industrial workers? A complete answer may lie outside the scope of this study, but an important part of the answer emerges from these findings. For while all Americans rank personal satisfaction highest in what they look for in a job, the best prospects consistently rank safe and healthy working conditions above all of the other criteria tested – higher than personal satisfaction, job security, or even a good income. And one important difference between electricians and skilled industrial workers is that electricians are generally associated with work at commercial buildings, homes, or construction sites, while industrial workers are associated with work in factories. This study does not explore the perceived working conditions of various occupations, but it's fair to assume that most Americans associate more health and safety risks with factory work than with many other trades (including electricians). One reason so many best prospects look so favorably on the work of electricians, then, is that being an electrician seems to be a lot healthier and safer than being a skilled industrial worker.

When they are asked to rate the importance of various aspects of a job for themselves, Americans' answers fall into two rather predictable categories (Table 9). At the upper end of the importance scale are things like personal satisfaction (88% very important, 9% somewhat important), safe and healthy working conditions (86% very important, 11% somewhat important), job security (80% very important, 14% somewhat important), and a good income (73% very important, 24% somewhat important). On the lower end of the scale are reasonable working hours and vacation time (61% very important, 30% somewhat important), a job that other people consider important (31% very important, 26% somewhat important), and a job that other people consider prestigious (18% very important, 28% somewhat important). The only surprise on the list is that having a job "in a field that is growing" is not better ranked than it is (46% very important, 31% somewhat important).

Table 9 **What the Public Considers Important in a Job**

Q.: I'd like to start by asking you what you consider important in a job for yourself, even if you're not working now or if you don't like your present job. How important is it to you to have a job that (READ EACH ITEM) – very important, somewhat important, not very important, or not important at all?

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%
PROVIDES PERSONAL SATISFACTION													
VERY IMPORTANT	88	87	87	89	89	87	86	86	91	83	90	89	89
SOMEWHAT IMPORTANT	9	11	10	9	8	5	5	10	8	12	7	8	8
NOT VERY IMPORTANT	1	1	1	1	1	2	1	1	1	1	1	*	2
NOT IMPORTANT AT ALL	1	1	1	1	1	3	4	2	*	2	1	2	1
NOT SURE	1	–	1	*	*	2	4	*	*	2	*	*	*
PROVIDES SAFE AND HEALTHY WORKING CONDITIONS													
VERY IMPORTANT	86	86	81	86	88	90	93	90	81	92	90	89	80
SOMEWHAT IMPORTANT	11	11	15	12	9	7	3	8	15	6	8	9	16
NOT VERY IMPORTANT	2	2	3	2	1	1	3	1	2	1	1	1	3
NOT IMPORTANT AT ALL	1	*	1	1	1	2	2	1	1	*	1	1	1
NOT SURE	*	*	1	–	1	–	–	*	*	–	*	*	*
PROVIDES JOB SECURITY OR FREEDOM FROM FREQUENT AND PROLONGED LAYOFFS													
VERY IMPORTANT	80	78	75	80	84	80	79	83	76	80	81	85	76
SOMEWHAT IMPORTANT	14	18	18	14	10	11	9	12	17	14	14	10	16
NOT VERY IMPORTANT	3	2	5	3	3	3	2	3	4	4	3	3	4
NOT IMPORTANT AT ALL	2	1	2	2	2	3	3	2	2	1	2	2	2
NOT SURE	1	1	1	*	1	4	6	1	1	1	1	*	1
PROVIDES A GOOD INCOME													
VERY IMPORTANT	73	66	71	73	75	78	85	79	65	80	74	74	69
SOMEWHAT IMPORTANT	24	31	26	25	22	15	11	18	32	16	24	24	28
NOT VERY IMPORTANT	2	3	2	2	2	2	1	2	2	2	1	1	3
NOT IMPORTANT AT ALL	1	1	1	1	1	3	1	1	1	2	1	1	1
NOT SURE	*	–	*	*	–	2	1	*	*	1	–	–	*
PROVIDES REASONABLE WORKING HOURS AND VACATION TIME													
VERY IMPORTANT	61	51	57	61	67	68	78	66	53	67	67	60	55
SOMEWHAT IMPORTANT	30	40	37	32	24	19	11	27	37	28	26	32	35
NOT VERY IMPORTANT	6	7	5	6	6	6	6	5	7	4	5	6	7
NOT IMPORTANT AT ALL	2	2	2	2	2	5	3	2	3	1	1	2	3
NOT SURE	*	–	*	*	1	2	2	1	*	1	1	*	*

(Continued)

Table 9 (Continued) **What the Public Considers Important in a Job**

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%
IS IN A FIELD THAT IS GROWING – LIKE COMPUTERS – INSTEAD OF A FIELD THAT ISN'T GROWING – LIKE STEELMAKING													
VERY IMPORTANT	46	41	41	43	50	57	56	47	44	54	46	45	44
SOMEWHAT IMPORTANT	31	38	34	34	24	20	18	30	33	23	30	34	34
NOT VERY IMPORTANT	12	15	15	12	12	7	8	11	13	12	13	12	12
NOT IMPORTANT AT ALL	8	5	8	8	10	10	10	8	8	8	7	7	9
NOT SURE	3	1	2	2	4	6	7	3	2	3	5	2	2
OTHER PEOPLE CONSIDER IMPORTANT													
VERY IMPORTANT	31	25	24	26	36	46	57	36	21	49	32	32	22
SOMEWHAT IMPORTANT	26	34	31	27	22	18	17	24	30	24	24	28	29
NOT VERY IMPORTANT	24	24	24	27	24	17	11	21	29	17	23	22	28
NOT IMPORTANT AT ALL	17	16	21	18	15	17	11	17	19	9	19	18	19
NOT SURE	1	*	*	1	3	1	4	1	1	1	1	1	1
OTHER PEOPLE CONSIDER PRESTIGIOUS													
VERY IMPORTANT	18	15	13	15	22	29	40	20	13	33	20	18	13
SOMEWHAT IMPORTANT	28	34	33	29	24	22	14	28	32	26	27	31	30
NOT VERY IMPORTANT	29	31	28	32	30	19	16	26	33	19	29	29	33
NOT IMPORTANT AT ALL	21	18	24	22	20	21	14	22	21	15	21	21	23
NOT SURE	3	2	2	2	3	9	17	4	1	8	4	1	1

*LESS THAN 0.5%.

Yet among those groups that represent the best recruiting prospects for the precision metalworking industry, the outlook is altogether different.

Ninety-three percent of eighth-grade graduates, for example, say safe and healthy working conditions are very important to them in a job, compared with 86% of the total public who attach this level of importance to job satisfaction. Eighty-five percent of eighth-grade graduates say a good income is very important, and 79% of this group focus on job security. Ninety percent of those who have attended or graduated high school see safe and healthy working conditions as very important in a job, followed by job satisfaction (86%), job security (83%), and having a good income (79%). This same distinction is particularly marked among the lowest income group in society ($7,500 a year or less), 92% of whom see safe and healthy working conditions as very important, followed by job satisfaction (83%), a good income (80% very important, 16% somewhat important), and job security (80% very important, 14% somewhat important). And among the lower middle-income group ($7,501-$15,000 a year), safe and healthy working conditions are considered very important by 90% (and somewhat important by 8%), followed by job satisfaction (90% very important, 7% somewhat important), job security (81% very important), and a good income (74% very important).

The key to recruiting sucessfully among the best prospects, then, isn't to persuade these Americans that precision metalworking as a career is promising, satisfying, or that it pays well – these groups are already more favorably disposed to the skilled trades than are Americans as a whole. The key is to convince these best prospects that working in a factory is neither more dangerous nor less healthy than other kinds of jobs they might consider.

Factors Influencing Career Decisions

Why do people decide to take one job over another? Just over one-third of those Americans who are working, have worked, or plan to work say that chance developments were more important in their career decisions than any plans they'd made (Table S1). But nearly 6 Americans in 10 say that their career plans were more important than chance developments in determining the kinds of jobs they've had. And the factors that influence these plans fall into three distinct categories of importance.

The most important factors are those centering on work experience and parental advice. Fifty-two percent of those who are working, have worked, or plan to work say that work experience since they left school has influenced their job decisions a great deal (Table 10). And 28% say that summer work experience while they were in school has had a great deal of influence on them, increasing to 40% among those 18-24 years old. Parental advice also figures prominently, cited as having had a great deal of influence on job decisions by 23% of the respondents.

The second most important set of factors involves the school system itself. "Advice from teachers in your school about what kind of job to get" is seen by 17% as having had a great deal of influence, while advice from guidance counselors falls slightly below, at 15%.

The third and least important set of factors are those outside home and school: newspapers and magazines (15% who say they've had a great deal of influence), the kinds of careers friends were planning (13%), and what the public has seen on television about different types of jobs (9%). Although television is considered slightly more important by younger Americans (12% among those 18-24 years old), it was among the least important factors among all demographic groups.

Table 10 **Various Factors That Influence the Decision to Take a Certain Job**
Base: Have Worked or Plan to Work

Q.: I'm going to read you several things that can influence people in deciding what kind of job they take. Thinking about your decision to take your present job or any previous or future job, how much were you – or would you be – influenced by (READ EACH ITEM) – a great deal, somewhat, or not at all?

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2357	404	300	930	449	258	120	1134	1098	241	406	622	909
	%	%	%	%	%	%	%	%	%	%	%	%	%
WORK EXPERIENCE SINCE YOU LEFT SCHOOL													
A GREAT DEAL	52	51	56	53	54	45	41	51	55	48	49	53	57
SOMEWHAT	31	32	33	33	28	27	26	33	29	28	33	33	29
NOT AT ALL	14	11	8	13	15	21	25	14	12	16	13	13	11
NOT APPLICABLE (VOL.)	2	6	1	*	2	2	1	1	3	4	2	*	2
NOT SURE	1	*	*	1	1	5	7	1	1	2	2	1	*

(Continued)

Table 10 (Continued) **Various Factors That Influence the Decision to Take a Certain Job**
Base: Have Worked or Plan to Work

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2357	404	300	930	449	258	120	1134	1098	241	406	622	909
	%	%	%	%	%	%	%	%	%	%	%	%	%
YOUR OWN SUMMER WORK EXPERIENCE WHILE YOU WERE IN SCHOOL													
A GREAT DEAL	28	40	26	26	25	23	26	28	29	31	29	27	27
SOMEWHAT	31	36	34	32	26	30	26	33	30	35	28	34	32
NOT AT ALL	36	23	37	40	42	37	33	35	39	29	38	35	40
NOT APPLICABLE (VOL.)	3	1	2	2	5	7	8	4	2	3	4	4	2
NOT SURE	1	*	*	*	1	3	7	1	*	2	1	1	*
YOUR PARENTS' ADVICE ON WHAT KIND OF JOB TO GET													
A GREAT DEAL	23	27	21	20	23	28	27	25	21	27	26	25	20
SOMEWHAT	39	48	42	40	35	29	23	37	43	37	34	40	42
NOT AT ALL	36	24	37	40	39	39	41	36	35	33	38	35	37
NOT APPLICABLE (VOL.)	1	*	*	1	3	2	5	2	1	3	1	1	1
NOT SURE	1	–	–	*	*	3	4	*	*	–	1	–	*
ADVICE FROM TEACHERS IN YOUR SCHOOL ABOUT WHAT KIND OF JOB TO GET													
A GREAT DEAL	17	23	14	14	18	19	23	19	15	25	19	19	14
SOMEWHAT	45	50	50	50	39	34	22	43	51	40	44	44	50
NOT AT ALL	35	27	36	35	39	41	48	37	32	32	36	35	34
NOT APPLICABLE (VOL.)	2	*	*	1	3	5	5	2	1	3	1	2	1
NOT SURE	1	–	–	*	1	2	2	*	*	*	*	*	*
ADVICE FROM YOUR SCHOOL GUIDANCE COUNSELOR ON WHAT KIND OF JOB TO GET													
A GREAT DEAL	15	18	11	12	17	15	20	17	12	23	16	15	12
SOMEWHAT	35	43	36	36	32	25	17	35	37	33	33	36	37
NOT AT ALL	46	38	52	49	43	44	45	43	48	35	46	45	49
NOT APPLICABLE (VOL.)	4	1	1	2	7	12	11	4	3	9	3	3	3
NOT SURE	1	–	–	1	1	3	7	1	*	–	2	1	–
WHAT YOU READ IN NEWSPAPERS AND MAGAZINES ABOUT DIFFERENT KINDS OF JOBS													
A GREAT DEAL	15	17	17	14	15	11	12	15	15	22	14	18	13
SOMEWHAT	49	61	48	51	42	44	41	48	51	48	52	49	50
NOT AT ALL	35	22	35	35	43	42	41	36	33	29	33	33	37
NOT APPLICABLE (VOL.)	*	*	–	*	*	2	2	*	*	–	*	*	*
NOT SURE	*	–	–	*	–	2	3	*	*	1	1	–	*

(Continued)

Table 10 (Continued) **Various Factors That Influence the Decision to Take a Certain Job**
Base: Have Worked or Plan to Work

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2357	404	300	930	449	258	120	1134	1098	241	406	622	909
	%	%	%	%	%	%	%	%	%	%	%	%	%
THE KINDS OF CAREERS FRIENDS YOUR OWN AGE WERE PLANNING													
A GREAT DEAL	13	11	11	12	14	17	21	14	10	17	14	15	9
SOMEWHAT	42	43	46	44	40	32	27	42	43	41	39	44	43
NOT AT ALL	44	45	44	42	44	48	44	42	46	40	46	41	47
NOT APPLICABLE (VOL.)	*	–	–	*	1	*	1	*	*	*	–	*	*
NOT SURE	1	–	–	1	1	3	7	1	1	1	1	*	1
WHAT YOU SAW ON TV ABOUT DIFFERENT KINDS OF JOBS													
A GREAT DEAL	9	12	9	7	9	12	21	12	5	20	10	8	6
SOMEWHAT	33	40	37	34	29	24	31	34	33	31	36	34	32
NOT AT ALL	55	47	54	58	58	56	41	52	61	44	51	56	61
NOT APPLICABLE (VOL.)	1	1	*	*	2	6	2	2	1	3	2	1	*
NOT SURE	1	–	–	*	1	2	5	*	*	2	1	1	*

*LESS THAN 0.5%.

This same set of priorities is also in evidence among parents with children 17 years old or younger, a group that represents 32% of the total sample. In encouraging their children to pursue various kinds of jobs, these parents expect to be influenced by factors similar to those that have influenced their own job decisions, with the notable additions of the child's own interests and abilities (Table 11).

Eighty-three percent of these parents, in fact, say that the child's own interests are very important to them in determining what kinds of careers they will encourage their children to pursue, while 78% say that the child's abilities are very important. Parents also take a very future-oriented approach in thinking about their children's careers, with 65% of them saying that the prospects for the growth of the field are very important, while only 46% of all Americans consider the long term growth prospects of a field very important to them in deciding what kind of job they want for themselves (Table 9). Parents also rate a good income in a prospective job (51%) as well as what they know about different jobs from their own work experience (47%) as very important factors to consider when counseling their children about career plans.

Less influential factors are what the child's teachers or guidance counselors think the child's abilities are (34% very important), what parents know about different jobs from the work experience of friends and relatives (28%), what parents know about different jobs from newspapers and magazines (17%) or television (13%), and whether other people consider a job worthwhile (11%) or prestigious (9%).

Table 12 **Various Factors That Influence the Decision to Encourage Children to Pursue a Certain Career**
Base: Have Children 17 or Younger

Q.: I'd like to ask you about some things that may influence what kind of career you encourage your (child/children) to pursue. Would you say that (READ EACH ITEM) is very important to you in encouraging your (child/children) to pursue one career over another, somewhat important, not very important, or not important at all?

		Age					Education			Occupation				
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar
BASE	883	69	148	583	70	8	26	458	398	176	100	54	214	130
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
WHAT YOU THINK THE CHILD'S INTERESTS ARE														
VERY IMPORTANT	83	71	84	85	81	78	79	81	85	83	79	79	88	84
SOMEWHAT IMPORTANT	15	25	14	13	16	22	21	16	13	13	21	18	11	13
NOT VERY IMPORTANT	1	4	–	1	1	–	–	2	1	3	–	1	*	1
NOT IMPORTANT AT ALL	1	–	2	*	2	–	–	1	1	1	–	2	1	2
NOT SURE	*	–	–	1	–	–	–	1	*	*	–	–	*	1
WHAT YOU THINK THE CHILD'S ABILITIES ARE														
VERY IMPORTANT	78	75	75	78	80	81	74	78	78	80	78	77	79	73
SOMEWHAT IMPORTANT	19	24	21	18	18	19	21	19	19	17	17	20	18	23
NOT VERY IMPORTANT	1	1	1	1	–	–	–	*	1	–	2	3	1	–
NOT IMPORTANT AT ALL	2	–	3	2	2	–	–	2	2	3	2	–	1	2
NOT SURE	1	–	1	1	–	–	5	*	*	*	–	–	1	1
WHETHER THE JOB IS IN A FIELD THAT IS GROWING – LIKE COMPUTERS – OR IN A FIELD THAT ISN'T GROWING – LIKE STEELMAKING														
VERY IMPORTANT	55	46	45	56	65	92	64	59	49	51	46	40	58	57
SOMEWHAT IMPORTANT	34	40	40	33	29	–	24	31	37	36	40	39	33	34
NOT VERY IMPORTANT	5	7	6	6	2	–	–	4	7	7	9	9	4	6
NOT IMPORTANT AT ALL	6	5	10	5	4	9	9	5	6	5	4	12	5	3
NOT SURE	1	1	–	1	–	–	3	1	*	*	1	–	1	–
WHETHER THE JOB PROVIDES A GOOD INCOME OR NOT														
VERY IMPORTANT	51	47	45	51	61	56	68	59	42	37	43	49	59	54
SOMEWHAT IMPORTANT	42	42	47	43	32	21	21	35	50	54	47	45	37	40
NOT VERY IMPORTANT	4	8	5	4	5	–	5	3	6	5	8	3	2	5
NOT IMPORTANT AT ALL	2	3	2	2	2	22	6	2	2	3	2	4	2	2
NOT SURE	*	–	–	*	–	–	–	–	*	*	–	–	–	–

(Continued)

Table 11 (Continued) **Various Factors That Influence the Decision to Encourage Children to Pursue a Certain Career**
Base: Have Children 17 or Younger

		Age					Education			Occupation				
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar
BASE	883	69	148	583	70	8	26	458	398	176	100	54	214	130
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
WHAT YOU KNOW ABOUT DIFFERENT JOBS FROM YOUR OWN WORK EXPERIENCE														
VERY IMPORTANT	47	38	44	47	59	33	69	46	46	39	56	52	45	46
SOMEWHAT IMPORTANT	42	44	46	43	30	22	11	42	45	51	35	39	44	39
NOT VERY IMPORTANT	7	11	6	7	8	13	9	8	7	8	7	4	6	10
NOT IMPORTANT AT ALL	3	6	4	2	2	32	7	4	2	2	2	5	4	4
NOT SURE	1	–	1	1	1	–	4	*	1	1	–	–	1	–
WHAT THE CHILD'S TEACHERS OR GUIDANCE COUNSELORS THINK THE CHILD'S ABILITIES ARE														
VERY IMPORTANT	34	28	34	33	46	65	77	41	25	26	31	25	36	34
SOMEWHAT IMPORTANT	51	57	52	51	44	22	20	48	56	51	54	54	53	50
NOT VERY IMPORTANT	10	11	8	11	6	–	4	8	13	14	11	11	8	10
NOT IMPORTANT AT ALL	4	3	7	4	3	12	–	3	6	8	3	8	2	6
NOT SURE	*	–	–	*	–	–	–	*	*	*	–	–	*	–
WHAT YOU KNOW ABOUT DIFFERENT JOBS FROM THE WORK EXPERIENCE OF FRIENDS AND RELATIVES														
VERY IMPORTANT	28	25	28	28	25	55	48	28	27	23	24	24	28	30
SOMEWHAT IMPORTANT	54	49	57	54	60	22	36	54	55	59	55	55	58	55
NOT VERY IMPORTANT	12	22	10	12	6	22	9	13	12	12	13	11	11	13
NOT IMPORTANT AT ALL	5	5	5	5	9	–	7	5	5	6	8	10	3	2
NOT SURE	*	–	–	*	–	–	–	*	*	*	–	–	*	–
WHAT YOU KNOW ABOUT DIFFERENT JOBS FROM WHAT YOU READ IN NEWSPAPERS AND MAGAZINES														
VERY IMPORTANT	17	20	17	16	20	44	21	19	15	12	15	17	19	16
SOMEWHAT IMPORTANT	56	59	57	56	61	36	40	54	60	66	58	49	56	58
NOT VERY IMPORTANT	19	16	17	20	16	11	28	19	18	16	18	23	19	20
NOT IMPORTANT AT ALL	7	5	10	7	3	9	5	8	6	5	9	12	6	6
NOT SURE	*	–	–	*	–	–	6	–	*	*	–	–	1	–

(Continued)

Table 11 (Continued) **Various Factors That Influence the Decision to Encourage Children to Pursue a Certain Career**
Base: Have Children 17 or Younger

		Age					Education			Occupation				
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar
BASE	883	69	148	583	70	8	26	458	398	176	100	54	214	130
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
WHAT YOU KNOW ABOUT DIFFERENT JOBS FROM WHAT YOU SEE ON TELEVISION														
VERY IMPORTANT	13	16	9	12	17	55	37	18	7	7	10	12	14	11
SOMEWHAT IMPORTANT	37	58	39	34	43	22	35	41	34	27	33	29	39	38
NOT VERY IMPORTANT	30	15	33	33	24	13	16	25	36	38	29	35	29	40
NOT IMPORTANT AT ALL	19	11	18	21	17	9	13	16	22	27	28	25	17	11
NOT SURE	1	–	1	1	–	–	–	*	1	2	–	–	1	–
WHETHER OTHER PEOPLE CONSIDER A JOB WORTHWHILE OR NOT SO WORTHWHILE														
VERY IMPORTANT	11	15	10	10	15	32	35	15	4	5	9	7	9	12
SOMEWHAT IMPORTANT	31	33	35	29	28	34	16	33	29	26	26	32	29	33
NOT VERY IMPORTANT	33	23	31	34	35	12	25	28	38	37	34	32	34	38
NOT IMPORTANT AT ALL	26	28	24	26	21	22	24	23	28	31	31	29	27	16
NOT SURE	*	–	–	*	1	–	–	*	1	1	–	–	*	–
WHETHER OTHER PEOPLE CONSIDER A JOB PRESTIGIOUS OR NOT SO PRESTIGIOUS														
VERY IMPORTANT	9	10	7	9	13	32	37	12	4	7	3	7	9	10
SOMEWHAT IMPORTANT	27	27	27	26	28	22	24	29	24	22	32	30	26	23
NOT VERY IMPORTANT	34	30	36	34	38	35	24	29	41	41	34	24	33	41
NOT IMPORTANT AT ALL	29	32	29	30	21	11	15	29	30	30	30	39	31	27
NOT SURE	1	2	1	1	–	–	–	1	*	*	1	–	1	–

*LESS THAN 0.5%.

Some Qualifiers

Although skilled employment in general and skilled industrial employment in particular receive positive ratings from the American people, there are some problems with employment that the precision metalworking industry should consider in its recruiting efforts.

One is that while Americans as a whole disagree (52-45%) that "the way things are going in America, people doing blue collar work such as precision metalworking will not be as respected as others holding skilled white collar and executive jobs," younger Americans (ages 18-24) agree with the proposition by 53-46% (Table S6). These findings underscore the importance of emphasizing the rigorousness and selectivity of the training and apprenticeship programs as a way of appealing to younger Americans.

By 73-24% Americans agree that "while a skilled labor job always meant regular work in the past, now with the introduction of robots and new production methods, you can't tell when you might be replaced by a machine." Although Americans rate skilled industrial work positively (by 69-29%) on the number of job openings in the next few years, the specter of displacement by new technologies is clearly in the public mind, particularly among younger Americans, who agree, by 77-22%, that the introduction of robots and new production methods makes skilled industrial work less secure. Thus in recruiting, the industry should emphasize its partnership with new manufacturing technologies and the opportunities for promotions and long term careers that these changes present.

Finally, by 60-33%, Americans agree that "the trouble with a skilled job such as precision metalworking is that once you have the skill there is not much opportunity for growth and the work can get very repetitious." Here, too, younger Americans agree even more strongly (64-34%) than the public as a whole. The challenge to the industry here is to dwell on the creativity required on the job, a point perhaps made more easily by emphasizing the use of new manufacturing technologies specifically designed to displace the most repetitious of industrial tasks.

The Precision Metalworking Industry's Recruiting Record

The industry's leadership (as represented by the Task Force on the Skilled Trades Shortage) gives a convincing account of the difficulties their companies (or their member companies) have had in recent years in recruiting qualified candidates. Yet for those who currently conduct structured training programs, the recruiting effort has not been aggressive (Table 12):

By 68-32% these companies do not regularly make presentations to high school students on job opportunities in the industry and in their companies.

By 65-34% these companies do not regularly update representatives of the local media on job opportunities in the industry and in their companies.

By 61-39% these companies do not regularly participate in local or regional career fairs or career days directed to high school students.

By 59-41% these companies do not regularly visit high school guidance counselors to keep them up to date on job opportunities in the industry and in their companies.

By 57-43% these companies do not regularly sponsor an athletic team in their communities to promote company visibility.

Instead, recruiting efforts have been much more modest:

By 56-44% these companies regularly visit vocational or technical schools in their areas to keep these schools up to date on job opportunities in the industry and in their companies.

By 51-47% these companies regularly buy advertisements in the local high school yearbook, football programs, or other high school publications.

Table 12 **The Precision Metalworking Industry's Recruiting Record**
Base: Does Conduct Structured Training Programs

Q.: Whether or not you're currently recruiting for apprentices and trainees, does your company regularly (READ EACH ITEM), or doesn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	TOOL and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling And Machining	1-10	11-40	41-70	71-100	MORE Than 100	East	Midwest	South	West
BASE	353	27	26	47	43	34	61	115	41	148	64	30	61	101	27	204	21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
VISIT VOCATIONAL OR TECHNICAL SCHOOLS IN THE AREA TO KEEP THEM UP TO DATE ON JOB OPPORTUNITIES IN THE INDUSTRY AND IN YOUR COMPANY																	
DOES	56	51	88	61	60	28	65	56	36	56	64	55	84	63	51	53	57
DOES NOT	44	49	12	37	40	72	35	44	64	44	36	45	16	37	49	47	43
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
BUY ADVERTISEMENTS IN THE LOCAL HIGH SCHOOL YEARBOOK, FOOTBALL PROGRAMS, OR OTHER HIGH SCHOOL PUBLICATIONS																	
DOES	51	43	64	58	37	35	58	54	59	45	53	61	55	58	58	49	33
DOES NOT	47	54	36	37	60	65	41	45	37	55	46	37	45	42	42	49	67
NOT SURE	*	–	–	2	2	–	1	–	–	*	1	2	–	1	–	*	–
SPONSOR AN ATHLETIC TEAM IN THE COMMUNITY TO PROMOTE YOUR COMPANY'S VISIBILITY																	
DOES	43	44	64	55	59	44	31	41	32	39	50	55	67	41	19	46	53
DOES NOT	57	53	36	42	41	56	69	58	68	61	48	45	31	58	81	53	47
NOT SURE	*	–	–	–	–	–	–	1	–	–	2	–	–	1	–	–	–

(Continued)

Table 12 (Continued) **The Precision Metalworking Industry's Recruiting Record**
Base: Does Conduct Structured Training Programs

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	TOOL and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling And Machining	1-10	11-40	41-70	71-100	MORE Than 100	East	Midwest	South	West
BASE	353	27	26	47	43	34	61	115	41	148	64	30	61	101	27	204	21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
VISIT HIGH SCHOOL GUIDANCE COUNSELORS TO KEEP THEM UP TO DATE ON JOB OPPORTUNITIES IN THE INDUSTRY AND IN YOUR COMPANY																	
DOES	41	43	42	42	43	24	49	42	34	38	45	31	70	48	38	39	35
DOES NOT	59	57	58	55	57	76	51	58	65	62	55	69	30	52	62	61	65
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PARTICIPATE IN LOCAL OR REGIONAL CAREER FAIRS OR CAREER DAYS DIRECTED TO HIGH SCHOOL STUDENTS																	
DOES	39	36	61	33	43	29	57	35	21	41	43	40	62	40	39	37	48
DOES NOT	61	64	39	65	57	71	43	65	78	59	57	60	38	60	61	63	52
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
UPDATE REPRESENTATIVES OF THE LOCAL MEDIA ON JOB OPPORTUNITIES IN YOUR INDUSTRY AND IN YOUR COMPANY																	
DOES	34	39	58	30	28	29	46	32	29	30	44	28	50	38	33	32	38
DOES NOT	65	61	42	67	72	67	54	68	70	70	56	67	49	62	67	67	62
NOT SURE	*	–	–	–	–	3	1	–	–	–	–	5	1	–	–	1	–
MAKE PRESENTATIONS TO HIGH SCHOOL STUDENTS ON JOB OPPORTUNITIES IN THE INDUSTRY AND IN YOUR COMPANY																	
DOES	32	35	33	36	42	23	41	29	12	37	36	23	54	30	25	34	31
DOES NOT	68	65	67	62	58	77	59	71	87	63	64	77	46	70	75	66	69
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*LESS THAN 0.5%.

These findings are based only on those companies that currently conduct structured training programs (43% of all companies). However, the findings are independent of whether or not the company is currently recruiting apprentices or trainees. Thus, the answers are isolated from any slowdown in recruiting efforts due to the recession.

The simple fact of the matter is that the industry hasn't been telling its story. To be sure, most of these firms are so small that sending a representative to a high school for a day would almost surely mean lost production, with potentially serious consequences.

But the main point, as any salesman knows, is that you can't move a "product" without ringing a few doorbells. And at the grassroots, the precision metalworking industry just hasn't been ringing enough of the right doorbells. While calling on vocational and technical schools is essential, the industry may be missing promising candidates who for one reason or another did not end up in a vocational or technical school. The industry needs to recruit in the high schools as well.

Recommendations

In many ways, the precision metalworking industry is attempting to carve out a "market" among the nation's young adults in which its "product" can be promoted successfully.

For the foreseeable future, this market consists primarily of young adults from households in which the highest educational attainment is high school and from households with annual incomes of $25,000 or less. The targets are clearly high school students (before they've made a commitment to vocational or technical training), their parents, their teachers, and their guidance counselors. Students from upper income or college educated households are going to be a much tougher sell.

In recruiting among these "best prospect" groups, the industry clearly has to emphasize the quality of working conditions in the nation's independent precision metalworking shops because these groups rank safe and healthy working conditions as paramount to them in selecting jobs. If the industry's safety record is good compared with other occupations, it's a selling point worth making. If the record is poor, it is a condition that must be corrected. The favorable reputation the industry enjoys with its best prospects is of only limited usefulness to the industry's recruiting efforts unless these groups are convinced that the companies in the industry are safe places to work.

In this same vein, the precision metalworking industry also needs to convince candidates that employment in the industry offers ample job security. Certainly the survey of employers in the industry conducted as part of this study suggests that if apprentices and trainees complete the programs and go on to become fully skilled journeymen, their chances of retaining their jobs in an economic downturn increase substantially. But Americans in general question the security of industrial employment, owing largely to the extensive unemployment that now plagues many of the nation's largest manufacturers. The independent precision metalworking industry needs to distance itself from these perceptions.

But if the industry's most important defensive tactics are to persuade candidates that the shop floor is safe and the job is secure, its most important offensive requirements are to convince candidates that the work environment is both demanding and rewarding. And the more successfully the industry can communicate this point of view, the better will be its chances of appealing to the best qualified candidates from its "best prospect" pool, and perhaps even from the ranks of those who might have gone to junior college or college.

In this regard, the recruiting approach of the U.S. Marine Corps is instructive. The Marines, we're constantly reminded, are "looking for a few good men." The precision metalworking industry needs to appeal to the esteem Americans hold for highly skilled workers (whether doctors or skilled industrial workers) by representing its training programs as both selective and demanding. Far from being a liability, the length of the industry's training programs could be one of the most powerful selling points available, assuming, of course, that the industry's training is (or can be made) demanding.

Finally, the industry needs to position itself in partnership with the coming revolution in manufacturing technologies. To ignore this issue in recruiting is to suffer by inference the taint of being out of touch or behind the times on the one hand, and to let a candidate's fear of being displaced by a machine fester on the other. The new technologies offer precision metalworkers some exciting topics to discuss with candidates. And since these new technologies often take over the most repetitive and least interesting tasks, focusing on these changes indirectly addresses a candidate's concern with the prospect of boredom on the job. The precision metalworking industry will appeal most successfully to the best prospect candidates if it presents itself as an aggressive participant in the coming revolution rather than as a passive observer.

Precisely which vehicles would be most effective in delivering these messages is difficult to say, but parents, teachers, and young Americans themselves are clearly the most important targets. Getting candidates into the shop for summer work is shown by this research to be a powerful communication device. To reach parents, owners of precision metalworking businesses should seek visibility in community affairs through civic clubs and voluntary organizations, and through occasional interviews with representatives of the local media. And, of course, the most powerful device of all is simply showing up at local high school career events or classes with an exciting, challenging story to tell.

The precision metalworking industry clearly has an opportunity to recruit the candidates it wants. The challenge is nothing more complicated than telling the right story to the right people on a regular basis.

III. The Employment Outlook in the Precision Metal-working Industry

The employment picture in the recession-plagued precision metalworking industry today in many ways is a classic case of the short term driving out the long term. Even though the managers of these companies see hopeful signs of a recovery and project substantial shortages of skilled journeymen and machine operators when business picks up, they nonetheless have cut employment of trainees sharply in the last six months. This cut in the employment of trainees almost guarantees a tighter market for skilled employees as the economy gathers steam and illustrates how difficult it is for the industry to maintain employment of apprentices and trainees when business drops.

Effects of the Recession

The recession is clearly the most important problem on the minds of the managers of America's independent precision metalworking shops in the summer of 1982. Business is down compared with a year ago for nearly half of these companies (48%), about the same for 27%, and up for only 24% (Table S7). Precision metalworking managers volunteer a dismal list of problems they see confronting their businesses over the next twelve months, led by a lack of sales (57%), high interest rates (50%), a weak economy (19%), and customers who are slow to pay their bills (5%) (Table 13).

Table 13 **Most Serious Problems for the Precision Metalworking Industry in the Next Twelve Months**

Q.: I'd like to start by asking you what you think are the two or three most serious problems facing your company in the twelve months ahead? What others?

	Total	Association							Number of Plant Employees					Region			
		SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-West	West
BASE	799	95	47	92	100	98	147	220	146	329	130	62	108	209	70	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
LACK OF BUSINESS/ SALES FOR THE INDUSTRY, GAINING ADDITIONAL INCOMING ORDERS, LACK OF CAPITAL EXPENDITURES, DECLINE IN CONSTRUCTION INDUSTRY	57	56	67	63	56	52	49	60	56	54	64	61	60	61	50	57	46
HIGH INTEREST RATES	50	41	47	41	53	49	55	50	45	55	49	32	49	43	53	50	64
GETTING SKILLED HELP, LABOR SHORTAGE	20	14	8	24	15	18	18	23	17	20	31	8	16	28	24	17	9
WEAK ECONOMY, POOR ECONOMIC CONDITIONS	19	24	28	25	28	22	23	14	17	19	18	21	31	20	19	20	6
DIFFICULTY IN MAINTAINING ADEQUATE CASH FLOW	9	9	3	9	5	13	3	11	14	8	6	7	3	4	5	11	22
AVAILABILITY OF MONEY, OBTAINING FINANCING	8	8	2	4	3	7	6	10	10	8	6	1	3	8	9	7	10
CUSTOMERS AREN'T PAYING BILLS ON TIME	5	7	2	5	6	11	3	3	8	5	2	2	–	3	5	6	7
LABOR PROBLEMS	5	6	12	3	2	5	9	3	2	6	7	7	7	4	4	6	1
IMPORTS FROM FOREIGNERS, FOREIGN COMPETITION	4	–	5	3	5	5	7	3	4	3	4	6	10	3	2	5	2

(Continued)

Table 13 (Continued) **Most Serious Problems for the Precision Metalworking Industry in the Next Twelve Months**

	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-West	West
	Association								Number of Plant Employees					Region			
BASE	799	95	47	92	100	98	147	220	146	329	130	62	108	209	70	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TAXES TOO HIGH	4	2	5	4	3	2	5	5	6	4	2	–	2	4	1	5	1
HIGH RATE OF INFLATION	4	8	2	9	3	9	2	2	5	3	*	5	6	4	1	4	6
NO PROBLEMS	4	7	–	1	5	4	3	4	4	3	3	6	1	4	8	2	4
HIGH, FLUCTUATING PRICES FOR RAW MATERIALS	3	4	8	6	3	2	3	2	3	3	3	1	2	4	1	2	1
DOMESTIC COMPETITION IS HURTING, COMPETITION KEEPING PRICES LOW	2	4	2	4	2	2	4	1	2	1	4	2	3	1	*	3	3
HIGH COST OF ENERGY	2	2	7	1	–	3	4	1	3	2	1	–	3	*	–	3	1
GOVERNMENT REGULATION IS EXCESSIVE, TOO MUCH REGULATION	2	3	2	2	5	2	*	2	3	1	2	–	3	1	4	2	1
ALL OTHER MENTIONS	2	1	2	4	5	–	2	1	–	2	1	1	6	*	3	2	3
NOT SURE, REFUSED	*	2	–	–	1	–	–	1	–	1	2	–	–	2	–	–	–

*LESS THAN 0.5%.

Employment on the shop floor is down as well:

During the last six months, skilled journeymen and machine operators have left 37% of precision metalworking companies at an average of 7.7 employees per company (Table 14). Thirty-six percent of precision metalworking companies have hired into the skilled ranks during this period, but at an average of only 3.3 journeymen and machine operators per company. The net result is that skilled employment in the industry has dropped by more than 12,000 workers over the last six months.

Apprentices and trainees have left 24% of precision metalworking companies at an average of 7.9 employees per company during this period. And while 28% of precision metalworking companies report hiring apprentices and trainees over the last six months, they have hired these workers at an average of only 2.6 employees per company. This equates to a net decline in the industry's employment of apprentices and trainees of nearly 9,000 workers over the last six months.

The managers of companies that have not hired skilled journeymen and machine operators in the last six months (64% of all companies) say "the current lack of business" (by 77-21%) was an important reason for not hiring skilled employees, but reject as unimportant reasons "the high wages demanded by skilled journeymen and machine operators" (by 66-31%) and "the lack of skilled journeymen and machine operators in this area" (61-36%) (Table S17). Similarly, managers of the companies that have not hired apprentices or trainees in the last six months (72% of all companies) say the current lack of business was an important reason for not hiring apprentices and trainees (by 75-24%) but reject as unimportant reasons "the high wages demanded by candidates" (by 72-25%) and "the low aptitude of candidates" (by 62-34%) (Table S19).

Table 14 **Plant Employment Changes in the Last Six Months**

	Skilled Journeymen and Machine Operators		Apprentices or Trainees	
	Base: Employees Have Left (37% of Companies) (Q.8)		Base: Employees Have Left (24% of Companies (Q.10)	
	Number of Employees Per Company (Mean) (Q.9)	Total Number of Employees Represented (in Thousands)	Number of Employees Per Company (Mean) (Q.11)	Total Number of Employees Represented (in Thousands)
EMPLOYEES THAT HAVE LEFT	7.7	21.3	7.9	14.1
REASONS:				
BECAUSE THEY WERE DISMISSED	2.6	7.2	6.0	10.7
BECAUSE THEY RETIRED	0.9	2.5	–	–
BECAUSE THEY TOOK A JOB IN ANOTHER INDEPENDENT PRECISION METALWORKING SHOP	1.0	2.8	0.5	.9
BECAUSE THEY TOOK A JOB IN A CAPTIVE METALWORKING SHOP	0.2	.5	0.1	.2
FOR OTHER REASONS	3.0	8.3	1.3	2.3
	Base: Employees Have Been Hired (36% of Companies) (Q.12)		Base: Employees Have Been Hired (26% of Companies (Q.15)	
	Number of Employees Per Company (Mean) (Q.13)	Total Number of Employees Represented (in Thousands)	Number of Employees Per Company (Mean) (Q.16)	Total Number of Employees Represented (in Thousands)
EMPLOYEES HIRED	3.3	8.9	2.6	5.4
SOURCES:				
OTHER INDEPENDENT PRECISION METALWORKING SHOPS	1.2	3.2	0.3	.6
CAPTIVE METALWORKING SHOPS	0.3	.8	0.1	.2
VOCATIONAL OR TECHNICAL TRAINING PROGRAMS AT THE SECONDARY OR POSTSECONDARY LEVEL	0.5	1.4	1.0	2.0
HIGH SCHOOLS DIRECTLY	x	x	0.4	.9
ALL OTHER SOURCES	1.3	3.5	0.8	1.7
DIFFERENCE		12.4		8.7
CURRENT EMPLOYMENT (Q.7)	40.9	305.2	5.2	38.7
CHANGE IN LAST SIX MONTHS		– 3.9%		– 18.3%

x = NOT ASKED.

Emerging Optimism

Amid this recessionary gloom, fully 33% of precision metalworking managers expect sales a year from now to be higher, 27% expect sales to be about the same, and 36% think sales will be lower. Their emerging optimism is also evident in what they see as the eroding seriousness over the next five years of two of today's most serious business problems:

By 75-23% managers say that "achieving an acceptable return on investment" will be a serious problem over the next twelve months. But they feel that this will be a serious problem over the next five years by only 63-27%.

The "decline in business attributable to the poor condition of the automobile industry" is seen as a serious problem over the next twelve months by 59-28%, declining to 53-27% who feel this will be a serious problem over the next five years.

And when they are asked to volunteer the two or three most serious problems facing their businesses in the next five years, precision metalworking managers add to their standing concerns such expansive issues as the need to modernize plant and equipment (7%), the need to expand their plant to take advantage of an economic upturn (3%), and the need to diversify their product lines (2%) (Table 15).

Table 15 **Most Serious Problems for the Precision Metalworking Industry in the Next Five Years**

Q.: What would you say are the two or three most serious problems facing your company in the next five years? What others?

	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-West	West
	Association								Number of Plant Employees					Region			
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
FINDING SKILLED, QUALIFIED EMPLOYEES, SHORTAGE OF LABOR	25	22	25	32	23	21	23	27	20	28	34	17	25	34	14	24	10
HIGH INTEREST RATES	15	12	17	15	12	16	14	16	17	16	10	10	12	18	17	15	5
POOR ECONOMY, UNCERTAIN ECONOMY	10	7	15	13	6	14	13	7	9	11	7	8	9	10	11	10	3
POOR STATE OF THE MARKET, NEED FOR BUSINESS TO IMPROVE	10	9	12	9	16	4	11	10	5	12	8	20	14	12	8	9	8
SAME AS NOW	7	8	17	13	6	4	5	8	8	7	7	6	8	5	13	7	11

(Continued)

Table 15 (Continued) **Most Serious Problems for the Precision Metalworking Industry in the Next Five Years**

	Total	Association						Number of Plant Employees					Region			
		SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-West	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
NEED TO MODERNIZE PLANT WITH NEW EQUIPMENT AND SYSTEMS	7	11	8	9	6	6	9	6	3	8	9	12	11	8	8	8	1
NO PROBLEMS	7	4	–	2	6	5	3	10	6	8	8	8	4	5	6	8	9
INCREASED FOREIGN COMPETITION	6	2	8	5	10	10	11	4	5	3	8	12	23	6	5	7	–
OBTAINING CAPITAL, FINANCING	4	5	3	1	8	1	2	6	4	3	9	4	2	6	2	4	–
NEED TO EXPAND PLANT TO TAKE ADVANTAGE OF ECONOMIC UPTURN, BUSINESS WILL GET BETTER	3	8	7	3	2	2	*	4	3	3	3	6	2	3	2	3	8
GOVERNMENT REGULATIONS	3	3	2	4	9	2	2	2	2	2	5	1	4	4	–	2	5
TAXES, TAX STRUCTURE	3	1	2	3	3	1	*	4	2	3	4	1	1	3	3	2	5
NEED TO DIVERSIFY PRODUCT LINE	2	4	2	1	5	1	4	1	*	1	4	3	10	2	1	2	–
WAGES, COST OF LABOR	2	2	5	1	4	2	4	1	1	2	3	5	1	1	4	2	–
PROLONGED RECESSION	2	1	–	–	1	4	–	2	2	2	*	–	–	1	–	2	3
UNIONS	1	2	–	1	1	1	–	1	–	1	4	–	–	*	–	1	2
ENERGY COSTS	1	2	2	1	2	1	1	–	–	1	2	2	1	*	–	1	–
INCREASING PRODUCTIVITY	*	3	–	–	1	*	1	–	–	*	1	–	3	1	–	*	–
ALL OTHER MENTIONS	3	3	7	3	–	10	2	3	5	2	4	8	–	1	*	5	4
NOT SURE, REFUSED	22	25	13	16	21	28	27	20	29	21	19	12	14	19	32	20	39

* LESS THAN 0.5%.

Finally, in considering their recruiting requirements if the level of business returns to the levels of 1977 and 1978, the managers of these precision metalworking businesses say they would want to hire an average of 12.9 skilled journeymen and machine operators per company but would only be able to recruit enough people to fill an average of 8.1 slots per company (Table 16). This difference represents a shortage of nearly 36,000 skilled employees – approximately 12% of the industry's current employment in the skilled ranks.

Table 16 **Recruiting Requirements if the Level of Business Returns to the Levels of 1977 and 1978**

	Skilled Journeymen and Machine Operators		Apprentices or Trainees	
	Base: All Companies (100% of Companies)		Base: Companies That Conduct Structured Training Programs (43% of Companies) (Q.26)	
	Number of Employees Per Company (Mean)	Total Number of Employees Represented (in Thousands)	Number of Employees Per Company (Mean)	Total Number of Employees Represented (in Thousands)
EMPLOYEES COMPANY WOULD WANT TO HIRE (Q.24,36)	12.9	96.2	5.6	18.0
EMPLOYEES COMPANY WOULD BE ABLE TO HIRE (Q.25,37)	8.1	60.4	5.7	18.3
DIFFERENCE	4.8	35.8	−0.1	−0.3

The Impact of Business Cycles on the Size of the Skilled Labor Pool

The anticipation of a shortage of skilled workers goes a long way toward explaining why employment concerns are so important to these managers during a recession:

> Twenty percent of precision metalworking manufacturers mention getting skilled help and the labor shortage as the most serious problem facing their businesses over the next twelve months.
>
> Twenty-five percent of these managers mention finding skilled or qualified employees and the shortage of labor as the most serious problem facing their businesses over the next five years.

Why these managers foresee a shortage in the skilled ranks in the future is evident from what has been happening in the less skilled ranks over the last six months. While plant employment in the industry has dropped by just less than 6% and employment of journeymen and machine operators has dropped by about 4%, the loss of nearly 9,000 apprentices and trainees in the last six months represents a decline of more than 18%. When times are tough, the industry clearly cuts its least productive employees most heavily – even at the risk of having too few skilled employees when business improves. This cyclicality explains why these managers see "having to raise wages to compete for skilled labor" as a serious problem by 52-45% over the next twelve months and by an even greater margin (59-32%) over the next five years.

The impact of business cycles on the employment equilibrium in the industry is made all the more severe by the lengthy training periods required to produce journeymen. Clearly, the supply of these skilled workers cannot be expanded overnight – the managers of those independent precision metalworking shops that conduct structured training programs report that it takes an average of 45.6 months to produce a fully skilled journeyman in tool, die, and moldmaking from a new employee with little or no applicable skills, 39.2 months to produce a journeyman in screw machining and 37.0 months to produce a journeyman in precision machining (Table S28). Some type of counter-cyclical public subsidy program to maintain the level of training during periods when demand is weak might help the industry even out peaks and troughs and introduce an element of stability into the long term supply of skilled employees.

Training programs under the Comprehensive Employment and Training Act (CETA), apparently have been of little value in this regard. Only 37% of precision metalworking companies have ever hired employees from such programs, and those that have done so consider such programs ineffective in preparing candidates for skilled work in the industry by 62-33% (Table 17). On the average, fewer than 1 in 4 of the employees they've hired from government-sponsored training programs for the economically disadvantaged in the last five years are still with their companies today – compared with an average of nearly 2 in 3 candidates from all sources who have successfully completed company training programs in the last four years; and a comparable percentage of trainees hired from all sources in the last four years whom these managers expect to be with their companies five years from now.

Table 17 **Effectiveness of Government-Sponsored Training Programs Such as CETA**
Base: Have Hired From Government-Sponsored Job Training Programs

Q.: In your experience, how effective do you think government-sponsored training programs are in preparing candidates to work in skilled plant jobs in your company – very effective, somewhat effective, not very effective, or not effective at all?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	PTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-West	West
BASE	321	42	15	44	38	25	68	89	42	128	63	24	56	110	21	167	23
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
VERY EFFECTIVE	6	–	6	4	3	–	6	9	4	9	3	2	8	6	–	8	8
SOMEWHAT EFFECTIVE	27	35	28	32	41	25	34	20	21	26	27	45	41	31	7	29	21
NOT VERY EFFECTIVE	35	33	22	33	31	25	35	37	30	36	35	35	29	37	22	32	43
NOT EFFECTIVE AT ALL	27	25	33	29	25	30	19	31	34	26	33	11	21	24	59	24	28
NOT SURE	4	7	11	2	–	18	6	1	7	3	2	7	1	2	–	7	–

Peripheral Employment Issues

Having said that the employment problem in the precision metalworking industry is fundamentally one of short term rather than long term employment planning, it's also worth noting several things that the problem is not. The industry's problem clearly is not a shortage of either skilled or less skilled employees in today's business environment. Only 5% of precision metalworking companies are actively recruiting for skilled journeymen and machine operators. Although these companies are seeking an average of 4.1 skilled employees each and expect to fill an average of 1.6 slots each, this "shortage" is negligible because so few firms are recruiting. This same scenario holds for apprentices and trainees, for whom only 1% of companies that have structured training programs are actively recruiting (Table 18).

Table 18 **Recruiting Requirements in the Next Three Months**

	Actively Recruiting for Skilled Journeymen and Machine Operators Base: Say Current Employment is too Low, are Recruiting for New Employees (5% of Companies) (Q.20)		Actively Recruiting for Apprentices or Trainees Base: Conduct Structured Training Programs, Say Current Employment is too Low, are Recruiting for New Employees (1% of Companies) (Q.32)	
	Number of Employees Per Company (Mean)	Total Number of Employees Represented (in Thousands)	Number of Employees Per Company (Mean)	Total Number of Employees Represented (in Thousands)
NUMBER OF POSITIONS COMPANY IS RECRUITING FOR (Q.21,33)	4.1	1.5	2.6	.2
POSITIONS EXPECTED TO BE FILLED IN THE NEXT THREE MONTHS (Q.23,35)	1.6	.6	2.0	.1
DIFFERENCE	2.5	.9	0.6	.1

Nor does the industry's problem appear to be one of losing skilled employees to competitors or retirement, or one of unusually high attrition from training programs (Tables 19, S29, S30):

By 66-33% these managers say that "losing skilled workers to competitors" will not be a serious problem over the next twelve months. While a greater percentage of managers feel this will be a serious problem in the more distant future, they still say the problem will not be serious over the next five years, by 50-49%.

"Losing skilled workers to retirement" is seen as not serious by 74-24% over the next twelve months and by 60-36% over the next five years.

An average of 61.2% of the apprentices and trainees who've entered training programs in the last four years have or will have completed these programs successfully, meaning that it takes about 1.6 entrants to produce one program "graduate." Whether this is high or low is a matter of judgment, but a 1976 study of nearly 8,000 high school graduates who went on to college cited by the National Center for Education Statistics shows that fully 35% of the students dropped out within 4-1/2 years of matriculation. This suggests that it takes about 1.5 entering freshmen in the nation's colleges to produce 1 four-year graduate.

On the average, 64% of the apprentices and trainees who have entered training programs in the last four years are expected to be employed by the same companies five years from now.

Table 19 **Seriousness of Various Problems for the Precision Metalworking Industry in the Next Twelve Months and Over the Next Five Years**

Q.: Thinking about your business in the next twelve months, how serious a problem do you consider (READ EACH ITEM) – is it a very serious problem, somewhat serious, not very serious, or not serious at all?

Q.: And how about over the next five years?

	In the Next Twelve Months						Over the Next Five Years					
	Very Serious	Somewhat Serious	Not Very Serious	Not Serious At All	Not Applicable (Vol.)	Not Sure	Very Serious	Somewhat Serious	Not Very Serious	Not Serious At All	Not Applicable (Vol.)	Not Sure
BASE: 800	%	%	%	%	%	%	%	%	%	%	%	%
FINDING ENOUGH QUALIFIED TRAINEES AND APPRENTICES TO ENSURE AN ADEQUATE SUPPLY OF JOURNEYMEN	38	19	19	22	2	*	47	23	13	12	12	4
ACHIEVING AN ACCEPTABLE RETURN ON INVESTMENT	37	38	15	8	*	1	25	38	18	9	*	10
A DECLINE IN BUSINESS ATTRIBUTABLE TO THE POOR CONDITION OF THE AUTOMOBILE INDUSTRY	36	23	12	16	12	1	28	25	13	14	12	7
THE NEED TO INCREASE THE USE OF NEW TECHNOLOGY TO STAY COMPETITIVE	29	35	19	12	4	1	34	35	14	10	3	3
OBTAINING ADEQUATE FINANCING FOR MODERNIZATION	27	22	22	27	2	1	22	22	21	21	2	12

(Continued)

Table 19 (Continued) **Seriousness of Various Problems for the Precision Metalworking Industry in the Next Twelve Months and Over the Next Five Years**

	In the Next Twelve Months						Over the Next Five Years					
	Very Serious	Somewhat Serious	Not Very Serious	Not Serious At All	Not Applicable (Vol.)	Not Sure	Very Serious	Somewhat Serious	Not Very Serious	Not Serious At All	Not Applicable (Vol.)	Not Sure
BASE: 800	%	%	%	%	%	%	%	%	%	%	%	%
THE HIGH COST OF NEW TECHNOLOGY TO IMPROVE PRODUCTIVITY	24	32	24	15	3	2	25	32	19	14	3	7
OBTAINING ADEQUATE FINANCING FOR EXPANSION	24	19	20	31	4	1	18	23	20	25	5	10
LOSING BUSINESS TO COMPETITION OUTSIDE THE U.S.	23	20	20	29	6	1	28	20	18	23	6	5
HAVING TO RAISE WAGES TO COMPETE FOR SKILLED LABOR	19	33	27	18	1	2	23	36	22	10	1	6
THE NEED TO DEVELOP NEW PRODUCTS TO STAY COMPETITIVE	18	24	16	18	23	1	21	23	15	16	23	2
THE COST OF COMPLYING WITH FEDERAL GOVERNMENT REGULATIONS	13	30	31	22	2	2	14	29	26	19	2	9
LOSING SKILLED WORKERS TO COMPETITORS	13	20	34	32	1	1	17	27	27	23	1	5
THE AVAILABILITY OF NEW TECHNOLOGY TO IMPROVE PRODUCTIVITY	9	21	32	33	3	1	11	22	28	29	3	6
LOSING SKILLED WORKERS TO RETIREMENT	9	15	29	45	1	1	15	21	24	36	1	2
NOT HAVING THE CAPACITY TO HANDLE THE INCREASE IN BUSINESS RESULTING FROM THE NATIONAL DEFENSE BUILDUP	6	11	22	38	21	2	7	14	19	34	21	5

* LESS THAN 0.5%.

Finally, the industry's problem at the moment is not the quality of the apprentices and trainees available to the industry, although managers assert (by 57-41%) that "finding enough qualified trainees and apprentices to ensure an adequate supply of journeymen" will be a serious problem over the next twelve months. Forty-one percent of the managers of companies that conduct structured training programs say that the quality of their recent apprentices and trainees is higher than it was five years ago, 32% see quality as about the same, and only 21% say the quality of recent trainees and apprentices is lower (Table S37). And these companies are divided on how tough it is to recruit qualified candidates to become apprentices and trainees – 50% report a great deal or some difficulty in the last few years, while 49% report little or no difficulty at all (Table S38). The companies that conduct structured training programs and have experienced difficulty recruiting qualified candidates in the last few years cite "good candidates being able to get higher wages in other kinds of work" (by 73-27%), "local high schools encouraging students to go to college instead of training for a trade" (by 59-35%), and "the perceived low prestige of working in a plant" (by 53-41%) as very or somewhat important reasons for this difficulty (Table S39). They reject both "inadequate recruiting efforts" on their part (by 63-36%) and "racial or ethnic prejudice" on the part of current employees (by 94-6%) as reasons for their difficulty in recruiting qualified candidates.

The ample pool of candidates available to enter the industry's training programs in this period of high national unemployment has apparently enabled companies to be more selective in admitting apprentices and trainees. And while these managers expect no shortage of candidates even if the level of business returns to the levels of 1977 and 1978, it is instructive that they consider the supply of qualified candidates to be a serious concern over the next twelve months by 57-41%, while they consider this to be serious by 70-25% over the next five years.

In the long run, of course, changes in manufacturing technology are going to have an enormous impact on the mix of skills and the number of people required by American industry. Exactly who the winners and losers will be in the age of robots is clearly beyond the scope of this study, but the managers of America's independent precision metalworking shops are far from settled on a point of view on this issue themselves. By 64-31% they see "the need to increase the use of new technology to stay competitive" as a serious problem over the next twelve months, increasing to 69-24% who feel this will be a serious problem over the next five years. And majorities see the high cost of this new technology as a serious problem facing their companies over both the next twelve months and the next five years. Yet, while 57% see new manufacturing technologies increasing the demand for skilled labor nationally over the next five years, 50% say these technologies will decrease demand for skilled labor in their own companies over this period, and 43% see their own demand for skilled workers increasing.

Whatever the effect of new technology on the manpower requirements of the precision metalworking industry over the longer term, these survey results clearly document an employment problem in the industry at the present and for the foreseeable future. But to call the problem a standing shortage of skilled labor is to look at only one-half of the equation, for the industry has reduced employment in this recession. The problem instead is the tendency of these companies to cut employment of apprentices and trainees sharply in a downturn, which is compounded by lengthy training periods. If the experience of the last six months is typical, it is clear that without significant policy changes by either the industry, or government, or both, periods of increasing demand for the industry's products will almost always be accompanied by at least a more competitive market for skilled labor and, quite possibly, a significant shortage of these skilled employees as well.

Supplemental Tables:

The Public

Table S1 **Chance vs. Planning in Career Decisions Base: Have Worked or Plan to Work**

Q.: In your own experience, which do you think is more important in determining the kinds of jobs you've had or expect to have – the plans you've made, or developments beyond your control?

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2357	404	300	930	449	258	120	1134	1098	241	406	622	909
	%	%	%	%	%	%	%	%	%	%	%	%	%
PLANS MADE	58	64	62	60	56	47	47	53	65	54	57	58	60
DEVELOPMENTS BEYOND CONTROL	37	32	36	37	39	41	38	41	32	39	37	38	37
NOT SURE	5	4	2	3	5	12	15	6	3	7	6	4	3

Table S2 **Reasons for Not Considering a Career in Precision Metalworking Base: Have Worked or Plan to Work, Have Not Considered a Career in Precision Metalworking**

Q.: Why have you not considered a career in the precision metalworking industry? What else?

		Age					Education			Parent's Occupation						
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar	Union Member	Trade Training
BASE	1925	320	236	763	375	218	90	877	954	231	127	155	369	296	498	844
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
IT DOESN'T INTEREST ME	31	37	34	34	27	18	14	30	34	36	38	36	27	31	28	33
AM WORKING IN A DIFFERENT FIELD/PROFESSION	25	23	27	22	26	29	30	23	26	24	24	28	26	21	28	27
NEVER THOUGHT OF IT	13	12	11	15	14	11	10	16	10	13	7	10	12	17	16	12
NO EXPOSURE/KNOWLEDGE OF THE INDUSTRY	11	14	10	12	6	11	11	10	11	9	7	6	9	13	9	11
IT IS/WAS CONSIDERED A MAN'S JOB	10	3	7	11	15	13	2	11	10	9	7	14	11	8	11	10
NOTHING AVAILABLE IN OUR AREA	7	5	5	8	8	5	8	8	5	4	4	6	7	6	6	7
NO TRAINING	6	5	5	6	7	8	18	6	5	3	5	4	6	7	8	5
NOT MECHANICALLY INCLINED	6	4	3	6	8	4	1	5	7	7	8	5	6	6	5	5
WOULDN'T CONSIDER ANYTHING IN THAT FIELD	5	7	7	5	4	5	4	5	6	7	7	5	6	5	5	6
BECAUSE AM COLLEGE EDUCATED	4	8	4	4	2	1	–	*	7	8	9	4	3	2	3	3
IT SOUNDS BORING/ REPETITIOUS/DULL	3	3	5	4	4	*	–	3	5	3	4	6	4	5	3	4
I AM A HOUSEWIFE	2	*	2	2	3	4	4	3	1	*	2	2	3	2	2	2
WAS NOT CHANNELED IN THAT DIRECTION	2	1	3	2	1	3	2	2	2	3	2	3	1	2	2	2
ALL OTHER MENTIONS	3	3	4	2	2	4	6	3	3	5	–	3	3	3	3	4
NOT SURE, REFUSED	2	1	1	1	3	2	4	3	*	1	–	2	1	2	1	1

*LESS THAN 0.5%.

Table S3 **Whether Encouraging Children to Pursue a Precision Metalworking Career has Been Considered**
Base: Have Children 17 or Younger

Q.: Have you ever considered encouraging your (child/children) to pursue a career in the precision metalworking industry as a skilled tool and die maker, precision machinist, or something like that, or haven't you?

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or Less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	886	68	149	585	71	8	26	457	402	50	125	268	398
	%	%	%	%	%	%	%	%	%	%	%	%	%
HAVE CONSIDERED	12	10	8	11	24	29	24	14	8	21	14	14	9
HAVE NOT CONSIDERED	86	87	91	87	76	62	70	85	90	79	81	83	91
NOT SURE	2	2	1	2	–	–	6	1	2	–	5	2	1

Table S4 **How Strongly Children will be Encouraged to Pursue a Career in Precision Metalworking**
Base: Have Children 17 or Younger, Have Considered Encouraging Their Children to Consider Precision Metalworking

Q.: How strongly do you expect to encourage your (child/children) to pursue a career in the precision metalworking industry – very strongly, somewhat strongly, or won't you encourage your (child/children) to pursue a career in precision metalworking at all?

		Region				Age					Education			Occupation				
	Total	East	Mid-West	South	West	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar
BASE	100	20	29	31	20	7	12	63	16	2	6	64	30	176	101	54	215	130
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
VERY STRONGLY	24	6	17	30	38	30	42	15	38	–	38	29	10	22	8	60	23	11
SOMEWHAT STRONGLY	56	87	58	47	46	71	48	61	41	100	62	56	59	28	81	40	65	59
WON'T ENCOURAGE AT ALL	14	8	18	20	4	–	10	18	11	–	–	13	18	29	–	–	9	23
NOT SURE	2	–	6	–	–	–	–	1	4	–	–	–	5	–	9	–	3	–

Table S5 **Reasons for Not Considering Encouraging Children to Pursue a Career in Precision Metalworking**
Base: Have Children 17 or Younger, Have Not Considered Encouraging Their Children to Consider Precision Metalworking

Q.: Why have you not considered encouraging your (child/children) to consider a career in the precision metalworking industry? What else?

		Age					Education			Occupation				
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	Professional	Executive	Proprietor	Skilled Labor	White Collar
BASE	768	60	135	508	54	6	19	387	361	161	90	48	181	108
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOO YOUNG YET, NOT OLD ENOUGH	39	69	60	34	7	–	20	42	38	31	36	39	43	42
LET THEM CHOOSE WHAT THEY WANT	19	19	13	19	30	48	36	19	18	15	23	19	24	16
DON'T KNOW ANYTHING ABOUT IT/THE FIELD	14	3	11	16	18	–	11	12	16	21	9	16	10	18
NOT INTERESTED AT ALL	9	5	3	11	18	18	–	8	11	10	8	15	9	11
HOPE THEY WOULD CHOOSE A MORE PROFESSIONAL FIELD	8	2	8	10	9	–	3	6	12	18	8	5	5	8
IT'S A MAN'S JOB/ NOT FOR WOMEN	7	8	7	6	14	–	15	8	6	8	3	4	12	7
DON'T WANT THEM IN THAT TYPE OF JOB/TO WORK WITH THEIR HANDS	7	3	5	8	2	16	–	6	8	5	7	8	10	8
HAVEN'T ENCOURAGED THEM IN ANY FIELD YET	6	7	5	6	6	18	25	6	5	5	5	–	7	7
NOT A GROWING FIELD, NO JOBS, NO OPPORTUNITIES	5	1	5	6	–	–	–	6	5	3	7	2	5	8
HOPE THEY WOULD WANT TO GET AN EDUCATION	4	–	2	5	6	–	–	2	6	7	8	3	1	3
DON'T HAVE ANYTHING/JOBS/ OPPORTUNITIES LIKE THAT IN OUR AREA	4	4	2	4	5	–	4	4	3	2	5	4	2	6
ALL OTHER MENTIONS	1	–	2	1	2	–	4	1	1	1	2	3	–	–
NOT SURE, REFUSED	1	1	2	1	2	–	–	2	1	*	2	–	1	1

*LESS THAN 0.5%.

Table S6 **The Public's View on Various Statements About Precision Metalworking**

Q.: Let me read you some statements people have made about working in the precision metalworking industry as a skilled tool and die maker, precision machinist, or something like that. Thinking about young people going into this industry as a career, tell me if you agree or disagree with each statement.

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%
THE GOOD PART OF A JOB LIKE PRECISION METALWORKING IS THAT YOU CAN REGULARLY SEE WHAT YOUR WORK IS PRODUCING – AND THAT'S AN EXPERIENCE NOT MANY WORKING PEOPLE HAVE THESE DAYS													
AGREE	75	73	74	73	79	76	75	77	72	80	78	78	72
DISAGREE	21	26	24	23	17	17	15	20	24	18	19	20	25
NOT SURE	4	1	2	4	4	8	9	3	4	3	3	2	3
WHILE A SKILLED LABOR JOB ALWAYS MEANT REGULAR WORK IN THE PAST, NOW WITH THE INTRODUCTION OF ROBOTS AND NEW PRODUCTION METHODS, YOU CAN'T TELL WHEN YOU MIGHT BE REPLACED BY A MACHINE													
AGREE	73	77	71	75	71	72	69	75	72	78	76	74	71
DISAGREE	24	22	27	24	27	24	28	23	26	20	22	25	27
NOT SURE	2	1	1	1	3	4	4	2	3	1	2	1	2
ASSUMING THERE IS LIKELY TO BE A SHORTAGE OF SKILLED LABOR IN THE FUTURE, PRECISION METALWORKING WILL PAY HIGH WAGES FOR A PERSON MAKING IT A CAREER													
AGREE	70	61	67	69	75	80	74	71	69	69	72	73	70
DISAGREE	23	37	27	23	18	12	15	23	24	24	20	23	24
NOT SURE	7	2	6	8	8	9	11	5	7	6	8	4	5

(Continued)

Table S6 (Continued) **The Public's View on Various Statements About Precision Metalworking**

		Age					Education			Income			
	Total	18-24 Years	25-29 Years	30-49 Years	50-64 Years	65 and Over	8th Grade	High School	College	$7,500 or less	$7,501 to $15,000	$15,001 to $25,000	$25,001 and Over
BASE	2502	412	310	963	489	310	147	1223	1125	272	431	658	934
	%	%	%	%	%	%	%	%	%	%	%	%	%
THE TROUBLE WITH A SKILLED JOB SUCH AS PRECISION METALWORKING IS THAT ONCE YOU HAVE THE SKILL THERE IS NOT MUCH OPPORTUNITY FOR GROWTH AND THE WORK CAN GET VERY REPETITIOUS													
AGREE	60	64	61	58	60	57	59	58	61	64	58	57	61
DISAGREE	33	34	34	34	33	30	28	36	31	30	34	38	33
NOT SURE	7	2	5	8	7	12	13	6	8	7	8	5	7
BY HAVING A SKILLED LABOR JOB SUCH AS PRECISION METALWORKING THE CHANCES OF HAVING STEADY WORK AND JOB SECURITY ARE BETTER THAN IN OTHER OCCUPATIONS													
AGREE	53	53	45	50	59	62	62	56	49	62	54	56	51
DISAGREE	39	45	49	42	34	25	28	38	42	30	39	38	42
NOT SURE	8	3	6	8	7	13	10	6	8	8	7	6	7
THE WAY THINGS ARE GOING IN AMERICA, PEOPLE DOING BLUE COLLAR WORK SUCH AS PRECISION METALWORKING WILL NOT BE AS RESPECTED AS OTHERS HOLDING SKILLED WHITE COLLAR AND EXECUTIVE JOBS													
AGREE	45	53	51	43	41	39	44	42	47	47	44	42	47
DISAGREE	52	46	48	55	56	53	47	55	50	48	52	57	52
NOT SURE	3	1	1	2	3	8	9	3	2	5	4	1	2

Supplemental Tables:

Precision Metalworking Industry Employers

Table S7 **Sales in the First Quarter of 1982 Compared With Sales in the First Quarter of 1981**

Q.: Now let's turn to current business conditions. How did your company's sales, or total revenue, in the first quarter of 1982 compare to your company's sales in the first quarter of 1981 – were your sales up, down, or about the same?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	798	95	47	91	101	98	147	219	145	329	130	63	108	209	69	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
UP	24	31	18	15	29	20	14	29	26	23	24	26	23	29	37	20	23
DOWN	48	46	65	54	40	48	61	42	45	48	50	52	52	42	39	52	43
ABOUT THE SAME	27	23	17	30	29	30	24	27	27	28	25	22	22	28	19	27	33
NOT SURE	1	–	–	–	2	2	1	1	1	1	1	–	3	1	2	1	1

Table S8 **Expected Sales in the Next Twelve Months Compared With Sales in the Last Twelve Months**

Q.: How do you expect sales in the next twelve months to compare to sales in the last twelve months – do you think sales will be higher, lower, or about the same?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	799	95	47	92	101	98	147	219	145	329	130	63	108	209	69	471	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HIGHER	33	48	35	25	46	25	34	33	36	31	34	40	32	37	35	30	42
LOWER	36	28	42	45	21	36	37	36	35	37	32	31	34	28	39	39	26
ABOUT THE SAME	27	23	23	27	29	31	25	26	21	29	31	27	31	28	23	27	26
NOT SURE	4	1	–	3	4	8	4	4	7	3	3	2	3	7	–	4	6

Table S9 **How New Technology Will Affect the Demand for Skilled Labor**

Q.: With the increasing installation of high technology items such as computer-assisted manufacturing and robotics, what do you think will happen to the demand for skilled labor (READ EACH ITEM) in the next five years – will it increase, decrease, or remain about the same?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
IN YOUR OWN COMPANY																	
INCREASE	43	48	65	37	48	40	33	46	40	45	45	44	45	38	50	44	46
DECREASE	50	48	25	58	45	49	58	48	48	51	49	53	45	52	42	50	48
REMAIN ABOUT THE SAME	5	5	10	3	5	8	6	3	7	2	7	3	9	5	6	5	–
NOT SURE	2	–	–	1	–	3	3	3	5	1	–	–	–	5	2	1	6
NATIONALLY																	
INCREASE	57	57	72	46	60	65	56	55	55	58	63	50	57	47	55	61	64
DECREASE	23	21	12	34	23	17	19	25	18	27	25	19	23	27	19	22	19
REMAIN ABOUT THE SAME	15	19	17	10	13	16	22	13	20	12	10	18	18	17	20	14	11
NOT SURE	5	3	–	8	3	1	3	7	6	3	2	13	3	9	6	2	7

Table S10 **Number of Employees in Each of Three Job Categories (Mean)**

Q.: Now let's turn to some employment questions. Regardless of the job classifications your company actually uses, I'd like to ask you to think of your plant employees in three categories: skilled journeymen, machine operators – that is, those who don't set up machines – and apprentices or trainees. At the present time, how many (READ EACH ITEM) does your company employ?

		Association						Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Cast-ing	NSMPA/ Screw Ma-chine	AMSA/ Metal Stamp-ing	Tool and Die In-sti-tute	NTMTBA/ Tool Build-ers	NTMA/ Tool-ing and Ma-chin-ing	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
SKILLED JOURNEYMEN	20.2	31.9	20.6	13.9	20.9	12.0	49.3	11.9	3.3	10.0	23.6	33.6	159.7	27.9	9.6	19.7	11.6
MACHINE OPERATORS	20.7	84.7	48.4	15.9	42.6	22.7	28.1	6.9	1.8	7.7	22.4	40.9	188.5	16.9	10.4	24.9	13.3
APPRENTICES OR TRAINEES	5.2	11.9	9.8	4.9	5.9	4.0	7.2	3.8	1.2	3.4	7.5	10.4	29.7	5.1	4.4	5.4	5.0

Table S11 **Whether Skilled Journeymen or Machine Operators Have Left in the Last Six Months**

Q.: Have any skilled journeymen or machine operators left your company for any reason in the last six months, or haven't they?

		Association						Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Cast-ing	NSMPA/ Screw Ma-chine	AMSA/ Metal Stamp-ing	Tool and Die In-sti-tute	NTMTBA/ Tool Build-ers	NTMA/ Tool-ing and Ma-chin-ing	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	795	95	47	92	99	98	144	220	146	327	128	63	107	208	69	469	49
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HAVE LEFT	37	32	25	32	42	28	37	41	31	38	38	53	54	38	30	37	44
HAVE NOT LEFT	63	67	75	68	55	72	61	59	69	62	60	47	44	61	70	63	55
NOT SURE	*	1	–	–	1	*	1	–	–	*	*	–	1	1	–	*	–

*LESS THAN 0.5%.

Table S12 **Number of Skilled Journeymen or Machine Operators That Have Left in the Last Six Months for Various Reasons (Mean)**
Base: Skilled Journeymen or Machine Operators Have Left

Q.: How many skilled journeymen or machine operators left your company in the last six months (READ EACH ITEM)?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	311	30	13	30	43	34	66	96	45	121	46	31	61	81	23	187	20
BECAUSE THEY WERE DISMISSED	2.6	2.5	.2	1.2	1.9	.8	6.2	2.1	1.6	1.9	2.5	1.2	7.9	2.5	2.9	2.2	5.8
BECAUSE THEY RETIRED	.9	.5	.4	.5	.9	.6	3.2	.3	–	.4	1.0	1.5	4.5	.9	.1	1.0	.5
BECAUSE THEY TOOK A JOB IN ANOTHER INDEPENDENT PRECISION METALWORKING SHOP	1.0	1.8	.2	.5	.7	.7	1.0	1.0	.5	1.0	1.0	1.3	1.7	.9	1.3	.9	1.6
BECAUSE THEY TOOK A JOB IN A CAPTIVE METALWORKING SHOP	.2	.2	.5	.3	.3	.1	.1	.2	.1	.3	–	.1	.3	.2	.1	.2	.4
FOR OTHER REASONS	3.0	7.4	8.9	.8	.3	1.5	9.1	1.5	.9	1.3	4.0	2.8	14.9	4.1	.8	2.7	4.4

Table S13 **Whether Apprentices or Trainees Have Left in the Last Six Months**

Q.: Have any apprentices or trainees left your company for any reason in the last six months, or haven't they?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	797	95	47	92	101	98	145	219	145	328	130	63	107	207	70	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HAVE LEFT	24	24	23	38	21	15	28	24	17	26	29	30	33	27	21	21	40
HAVE NOT LEFT	74	74	77	62	77	85	70	74	81	74	71	70	64	70	79	79	54
NOT SURE	1	2	–	–	2	–	1	1	1	*	–	–	2	1	*	*	6

*LESS THAN 0.5%.

Table S14 **Number of Apprentices or Trainees That Have Left in the Last Six Months for Various Reasons (Mean)**
Base: Apprentices or Trainees Have Left

Q.: How many apprentices or trainees left your company in the last six months (READ EACH ITEM)?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	206	23	11	35	22	15	42	58	27	80	36	18	37	64	17	109	16
BECAUSE THEY WERE DISMISSED	6.0	70.1	1.1	2.6	1.3	3.4	3.8	2.0	2.6	1.7	2.0	61.3	5.4	14.2	3.3	2.2	5.2
BECAUSE THEY RETIRED	–	.1	.1	.1	–	–	–	–	–	–	–	.1	.1	–	–	–	–
BECAUSE THEY TOOK A JOB IN ANOTHER INDEPENDENT PRECISION METALWORKING SHOP	.5	.5	1.1	.1	.1	.8	.6	.5	.2	.3	.9	.6	1.1	.7	.6	.4	.2
BECAUSE THEY TOOK A JOB IN A CAPTIVE METALWORKING SHOP	.1	–	–	.2	.2	–	.1	.1	–	.2	–	.1	.1	.2	–	–	–
FOR OTHER REASONS	1.3	1.5	10.3	2.9	1.4	1.2	1.4	.7	.4	.8	2.3	.9	5.8	1.8	2.1	1.1	.5

Table S15 **Whether Company has Hired Skilled Journeymen or Machine Operators in the Last Six Months**

Q.: In the last six months, has your company hired any skilled journeymen or machine operators, or hasn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	799	95	47	92	101	98	146	220	146	329	130	63	108	209	70	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HAS HIRED	36	34	23	39	36	26	32	41	27	41	40	37	51	35	42	34	52
HAS NOT HIRED	64	64	77	60	64	74	67	59	73	59	60	63	48	65	58	66	48
NOT SURE	*	2	–	1	–	–	–	–	–	–	*	–	1	–	*	*	–

*LESS THAN 0.5%.

Table S16 **Number of Skilled Journeymen or Machine Operators Hired in the Last Six Months From Various Sources (Mean)**
Base: Have Hired Skilled Journeymen or Machine Operators

Q.: In the last six months, how many skilled journeymen and machine operators has your company hired from (READ EACH ITEM)?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	287	33	14	35	36	30	42	97	40	130	47	18	48	79	29	156	23
OTHER INDEPENDENT PRECISION METALWORKING SHOPS	1.2	2.6	1.3	1.0	1.1	.9	1.2	1.2	.4	1.3	1.7	1.4	2.4	1.2	1.1	1.3	.8
CAPTIVE METALWORKING SHOPS	.3	.4	.2	.5	.3	.1	.5	.3	.2	.2	.2	.2	1.6	.3	.2	.4	.1
VOCATIONAL OR TECHNICAL TRAINING PROGRAMS AT THE SECONDARY OR POST-SECONDARY LEVEL	.5	.5	1.4	.3	.7	.4	.4	.5	.2	.4	.7	.4	1.4	.7	.4	.5	.1
ALL OTHER SOURCES	1.3	5.3	2.2	1.3	1.4	2.0	.8	.9	.6	1.1	2.0	.9	4.1	1.1	.9	1.3	2.0

Table S17 **Importance of Various Factors in the Decision Not to Hire Skilled Journeymen or Machine Operators in the Last Six Months**
Base: Have Not Hired Skilled Journeymen or Machine Operators

Q.: How important in your decision not to hire a skilled journeyman or machine operator in the last six months was (READ EACH ITEM) – very important, somewhat important, somewhat unimportant, or very unimportant?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NEMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	506	60	33	56	65	67	103	122	104	199	81	45	59	129	40	310	27
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
THE CURRENT LACK OF BUSINESS																	
VERY IMPORTANT	64	60	89	71	54	65	70	62	61	67	63	69	73	55	63	68	72
SOMEWHAT IMPORTANT	13	11	–	18	10	11	15	14	17	12	9	2	14	18	13	11	6
SOMEWHAT UNIMPORTANT	8	7	2	5	20	5	7	8	6	8	11	25	6	10	6	7	9
VERY UNIMPORTANT	13	19	9	7	14	17	6	15	14	12	14	4	7	15	17	12	13
NOT SURE	1	2	–	–	–	–	1	*	–	1	2	–	–	–	1	1	–
THE LACK OF SKILLED JOURNEYMEN AND MACHINE OPERATORS IN THIS AREA																	
VERY IMPORTANT	22	18	22	40	24	14	16	26	26	20	19	28	14	36	17	17	23
SOMEWHAT IMPORTANT	14	18	22	20	11	13	12	15	13	18	13	8	15	14	16	15	9
SOMEWHAT UNIMPORTANT	13	22	4	8	17	10	19	11	9	14	21	13	16	12	11	14	15
VERY UNIMPORTANT	48	35	48	32	45	61	51	44	50	46	40	51	52	36	56	51	50
NOT SURE	2	7	4	–	1	–	2	2	–	2	6	–	3	2	–	2	2
THE HIGH WAGES DEMANDED BY SKILLED JOURNEYMEN AND MACHINE OPERATORS																	
VERY IMPORTANT	14	8	15	23	10	11	18	14	20	10	8	14	10	18	4	14	18
SOMEWHAT IMPORTANT	17	22	20	25	17	6	14	22	14	24	10	9	22	17	23	17	11
SOMEWHAT UNIMPORTANT	20	17	4	19	26	9	19	24	17	22	24	16	17	23	21	19	11
VERY UNIMPORTANT	46	49	59	32	43	68	48	38	47	43	52	59	51	40	52	47	60
NOT SURE	2	4	2	2	4	3	1	*	1	2	3	2	–	2	–	2	–

*LESS THAN 0.5%.

Table S18 **Number of Apprentices or Trainees Hired in the Last Six Months From Various Sources (Mean)**
Base: Have Hired Apprentices or Trainees

Q.: In the last six months, how many apprentices or trainees has your company hired from (READ EACH ITEM)?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Cast-ing	NSMPA/ Screw Ma-chine	AMSA/ Metal Stamp-ing	Tool and Die In-sti-tute	NTBA/ Tool Build-ers	NTMA/ Tool-ing and Ma-chin-ing	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	214	26	11	21	29	21	32	74	32	104	36	9	29	69	22	106	17
OTHER INDEPENDENT PRECISION METALWORKING SHOPS	.3	.1	.2	.3	.5	.9	.1	.3	.1	.2	.5	1.0	1.4	.3	.4	.4	.2
CAPTIVE METALWORKING SHOPS	.1	.1	.2	.1	.3	.5	–	–	–	–	.2	–	1.1	.1	.1	.1	–
VOCATIONAL OR TECHNICAL TRAINING PROGRAMS AT THE SECONDARY OR POST-SECONDARY LEVEL	1.0	.7	1.2	.6	1.5	.5	.9	1.1	.7	.9	1.4	1.4	1.1	1.4	.7	.8	1.0
HIGH SCHOOLS DIRECTLY	.4	1.4	.6	.4	.3	.2	.6	.3	.3	.2	1.3	.2	.9	.2	.8	.5	.4
ALL OTHER SOURCES	.8	.7	2.1	1.4	1.3	.6	1.1	.6	.6	.8	1.0	1.0	1.6	.5	1.1	.8	1.3

Table S19 **Importance of Various Factors in the Decision Not to Hire Apprentices or Trainees in the Last Six Months**
Base: Have Not Hired Apprentices or Trainees

Q.: How important in your decision not to hire an apprentice or trainee in the last six months was (READ EACH ITEM) – very important, somewhat important, somewhat unimportant, or very unimportant?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	574	65	36	70	69	77	113	144	113	220	93	54	76	139	47	355	33
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
THE CURRENT LACK OF BUSINESS																	
VERY IMPORTANT	67	66	79	74	56	69	67	67	66	67	66	67	74	65	69	67	73
SOMEWHAT IMPORTANT	8	12	6	19	7	7	5	7	5	9	12	14	4	8	12	7	9
SOMEWHAT UNIMPORTANT	8	6	6	2	17	8	6	8	9	7	9	7	6	8	8	8	7
VERY UNIMPORTANT	16	13	9	6	17	16	19	16	20	15	10	13	12	16	10	17	11
NOT SURE	1	1	–	–	–	–	2	*	1	–	2	–	1	3	–	*	–
THE LOW APTITUDE OF CANDIDATES TO BECOME APPRENTICES OR TRAINEES																	
VERY IMPORTANT	24	10	15	27	13	20	22	30	33	22	22	11	6	28	18	23	27
SOMEWHAT IMPORTANT	10	17	6	12	17	7	6	10	6	12	10	19	10	12	12	9	4
SOMEWHAT UNIMPORTANT	13	15	17	21	13	5	10	15	10	13	16	13	17	17	9	12	6
VERY UNIMPORTANT	49	45	57	36	54	67	57	40	50	45	44	53	63	39	60	50	52
NOT SURE	4	10	4	4	–	1	4	4	1	6	8	3	1	4	–	4	10
THE HIGH WAGES DEMANDED BY CANDIDATES TO BECOME APPRENTICES OR TRAINEES																	
VERY IMPORTANT	10	7	6	17	3	3	12	12	13	10	6	3	1	14	6	9	2
SOMEWHAT IMPORTANT	15	10	4	23	21	9	13	18	15	15	15	25	10	18	9	15	17
SOMEWHAT UNIMPORTANT	16	16	15	17	18	13	18	16	17	16	19	12	13	20	14	16	5
VERY UNIMPORTANT	56	61	70	41	54	72	56	50	54	55	54	56	71	46	72	55	73
NOT SURE	2	4	4	2	–	3	–	3	1	2	6	2	1	2	–	2	3

*LESS THAN 0.5%.

Table S20 **Whether the Number of Skilled Journeymen and Machine Operators Employed by the Company is too High or too Low**

Q.: Given current business conditions, your present plant and equipment capacity, and what you know about the number of present employees who will be retiring shortly, would you say the number of skilled journeymen and machine operators now employed by your company is too high, too low, or about right?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	798	95	47	92	100	98	146	220	145	329	129	63	108	209	70	469	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOO HIGH	4	4	3	9	3	2	7	4	2	6	4	2	8	4	7	4	–
TOO LOW	19	12	23	23	18	18	16	22	19	21	23	8	18	21	27	19	9
ABOUT RIGHT	76	84	74	68	78	79	74	74	79	72	73	90	74	73	66	77	91
NOT SURE	1	–	–	–	–	1	2	*	–	1	–	–	–	2	–	*	–

*LESS THAN 0.5%.

Table S21 **Whether Company is Actively Recruiting for Skilled Journeymen and Machine Operators Base: Number of Skilled Journeymen and Machine Operators is too Low**

Q.: Is your company actively recruiting to fill skilled journeyman and machine operator positions at the present time, or isn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	150	12	11	21	17	18	21	50	28	70	25	7	16	46	15	84	5
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
IS RECRUITING	26	29	14	26	44	6	48	24	12	36	33	–	15	42	34	15	46
IS NOT RECRUITING	74	71	86	74	56	94	55	76	88	64	67	100	85	58	66	85	54
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table S22 **Number of Skilled Journeyman and Machine Operator Positions Company is Recruiting for (Mean)**
Base: Number of Skilled Journeymen and Machine Operators is too Low, are Recruiting for Skilled Journeymen and Machine Operators

Q.: How many skilled journeyman and machine operator positions are you now actively recruiting for?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	40	4	2	5	7	2	6	14	4	24	8	0	3	18	6	15	1
NUMBER OF SKILLED JOURNEYMAN AND MACHINE OPERATOR POSITIONS	4.1	7.9	2.0	5.1	11.4	4.0	3.1	2.7	2.4	2.8	9.5	–	8.3	3.9	3.0	5.3	1.0

Table S23 **Whether Company Uses Various Recruiting Methods for Skilled Journeymen and Machine Operators**
Base: Number of Skilled Journeymen and Machine Operators is too Low, are recruiting for Skilled Journeymen and Machine Operators

Q.: As part of this recruiting effort, has your company (READ EACH ITEM) in the last three months, or hasn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Cast-ing	NSMPA/ Screw Ma-chine	AMSA/ Metal Stamp-ing	Tool and Die In-sti-tute	NMTBA/ Tool Build-ers	NTMA/ Tool-ing and Ma-chin-ing	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	40	4	2	5	7	2	6	14	4	24	8	0	3	18	6	15	1
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
PLACED AN ADVERTISEMENT IN THE LOCAL NEWSPAPER ANNOUNCING THE OPENINGS																	
HAS	60	100	–	78	91	100	65	45	92	37	100	–	100	71	27	57	100
HAS NOT	40	–	100	22	9	–	35	55	8	63	–	–	–	29	73	43	–
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
POSTED AN ANNOUNCEMENT OF THE OPENINGS OUTSIDE YOUR PLACE OF BUSINESS																	
HAS	42	43	50	–	59	100	44	39	37	31	32	–	43	48	73	26	–
HAS NOT	58	57	50	100	41	–	56	61	63	69	18	–	57	52	27	74	100
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
ASKED CURRENT EMPLOYEES TO RECOMMEND CANDIDATES FOR THE OPENINGS																	
HAS	66	79	–	57	89	50	56	70	55	61	84	–	100	55	73	73	100
HAS NOT	34	21	100	43	11	50	44	30	45	39	16	–	–	45	27	27	–
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

(Continued)

Table S23 (Continued) **Whether Company Uses Various Recruiting Methods for Skilled Journeymen and Machine Operators**
Base: Number of Skilled Journeymen and Machine Operators is too Low, are recruiting for Skilled Journeymen and Machine Operators

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	40	4	2	5	7	2	6	14	4	24	8	0	3	18	6	15	1
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
ADVISED LOCAL EMPLOYMENT AGENCIES OF THE OPENINGS																	
HAS	54	71	50	39	41	–	66	55	55	56	37	–	67	58	55	41	100
HAS NOT	46	29	50	61	59	100	35	45	45	44	63	–	43	42	45	59	–
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
NOTIFIED YOUR TRADE ASSOCIATION OF THE OPENINGS																	
HAS	30	–	50	83	41	50	31	22	45	19	37	–	71	43	27	20	–
HAS NOT	70	100	50	17	59	50	69	78	55	81	63	–	29	57	73	80	100
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table S24 **Number of Skilled Journeyman and Machine Operator Positions Company Expects to Fill (Mean)**
Base: Number of Skilled Journeymen and Machine Operators is too Low, are Recruiting for Skilled Journeymen and Machine Operators

Q.: Of the skilled journeyman and machine operator positions for which your company is now recruiting, how many do you think you'll fill in the next three months?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	40	4	2	5	7	2	6	14	4	24	8	0	3	18	6	15	1
NUMBER OF JOURNEYMAN AND MACHINE OPERATOR POSITIONS	1.6	5.6	2.0	.9	1.7	2.0	1.3	1.5	.6	1.6	2.3	-	4.6	1.0	2.3	2.0	2.0

Table S25 **Number of Skilled Employees Company Would Want to Hire if Business Returns to the Levels of 1977 and 1978 (Mean)**

Q.: If business conditions improved to the levels of 1977 and 1978, given your present plant and equipment capacity and what you know about the number of employees who will be retiring shortly, how many skilled journeymen and machine operators would you want to hire to handle this increase in business?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
NUMBER OF SKILLED JOURNEYMEN AND MACHINE OPERATORS	12.9	69.3	13.9	7.1	10.7	6.2	21.8	7.0	4.5	6.8	13.5	17.8	88.9	10.7	8.3	14.5	14.2

Table S26 **Number of Skilled Employees Company Would be Able to Hire if Business Returns to the Levels of 1977 and 1978 (Mean)**

Q.: And how many skilled journeymen and machine operators do you think you would be able to hire?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
NUMBER OF SKILLED JOURNEYMEN AND MACHINE OPERATORS	8.1	14.7	11.6	4.0	9.5	5.2	16.7	5.3	3.5	5.2	10.7	14.6	41.6	7.1	6.8	8.2	12.7

Table S27 **Whether Company Conducts Structured Training Program for New Employees**

Q.: Does your company currently conduct structured training programs – whether registered or nonregistered – for new employees, or doesn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	797	95	47	92	101	97	146	219	145	327	130	63	108	208	69	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
DOES CONDUCT	43	28	55	51	39	32	39	49	29	48	51	57	57	48	41	42	41
DOES NOT CONDUCT	56	71	45	49	61	66	59	50	70	50	49	43	42	51	55	57	59
NOT SURE	*	1	–	–	–	1	1	–	–	1	–	–	1	–	–	1	–

*LESS THAN 0.5%.

Table S28 **Average Duration of Training Program (Mean, in Months)**
Base: Conduct Structured Training Programs

Q.: What is the average duration, in months, of your program to produce a fully skilled journeyman in (READ EACH ITEM) from a new employee with little or no applicable skills?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	354	27	26	48	43	34	61	115	42	148	64	30	61	101	27	205	21
TOOL, DIE, AND MOLD-MAKING	45.6	49.7	48.1	32.0	43.6	47.1	39.9	47.4	45.6	46.9	45.0	48.4	42.5	44.9	46.6	45.7	46.4
PRECISION MACHINING	37.0	41.0	34.6	31.6	32.5	37.2	33.4	38.8	37.9	37.8	37.6	38.1	35.2	37.0	40.5	36.1	39.9
SCREW MACHINING	39.2	35.2	48.3	45.3	25.0	27.0	35.1	41.8	37.6	40.4	35.9	41.1	46.1	32.7	67.1	39.4	37.3

Table S29 **Percentage of Apprentices and Trainees Who Have or Will Have Completed Training Program (Mean)**
Base: Conduct Structured Training Programs

Q.: What percentage of the apprentices and trainees who have entered your company's programs in the last four years have or will have completed the program successfully?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	354	27	26	48	43	34	61	115	42	148	64	30	61	101	27	205	21
PERCENTAGE OF APPRENTICES AND TRAINEES	61.2	70.1	57.7	42.8	64.1	57.1	58.3	64.2	60.4	57.9	59.4	68.9	76.7	59.5	46.9	63.5	69.3

Table S30 **Percentage of Apprentices and Trainees Expected to be Employed by the Company Five Years From Now (Mean)**
Base: Conduct Structured Training Programs

Q.: And what percentage of the apprentices and trainees who have entered your company's programs in the last four years do you expect will be employed by your company five years from now?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	354	27	26	48	43	34	61	115	42	148	64	30	61	101	27	205	21
PERCENTAGE OF APPRENTICES AND TRAINEES	64.3	69.8	62.5	49.9	73.1	55.8	63.9	66.4	60.7	61.8	66.0	74.3	73.5	62.1	48.3	67.6	66.3

Table S31 **Whether the Number of Apprentices and Trainees Employed by the Company is too High or too Low**
Base: Conduct Structured Training Programs

Q.: Given current business conditions, your present plant and equipment capacity, and what you know about the number of employees who will be retiring shortly, would you say the number of apprentices and trainees now employed by your company is too high, too low, or about right?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	351	26	26	47	43	33	61	115	40	148	64	30	60	100	27	203	21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
TOO HIGH	4	–	3	5	5	8	4	4	5	3	4	11	7	4	6	5	–
TOO LOW	19	29	45	19	24	14	16	18	15	20	20	14	25	19	7	19	31
ABOUT RIGHT	75	66	52	71	71	74	80	75	73	76	76	75	66	73	82	74	69
NOT SURE	2	–	–	2	–	3	–	3	6	1	–	–	–	3	5	1	–

Table S32 **Number of Apprentices and Trainees Company Would Like to Hire (Mean)**
Base: Conduct Structured Training Programs, Number of Apprentices and Trainees is too Low

Q.: How many apprentices and trainees would your company presently like to hire?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	75	8	10	9	10	6	10	22	8	33	13	6	13	22	3	45	5
NUMBER OF APPRENTICES AND TRAINEES	4.0	4.4	3.6	3.5	5.2	3.8	5.8	3.4	2.0	3.2	4.5	6.6	8.5	4.0	.3	4.5	1.9

Table S33 **Whether Company is Actively Recruiting for Apprentices and Trainees**
Base: Conduct Structured Training Programs, Number of Apprentices and Trainees is too Low

Q.: Is your company actively recruiting to fill apprentice and trainee positions at the present time, or isn't it?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	75	8	10	9	10	6	10	22	8	33	13	6	13	22	3	45	5
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
IS RECRUITING	12	34	–	24	–	9	–	15	19	8	5	16	11	15	–	13	–
IS NOT RECRUITING	88	66	100	76	100	91	100	85	81	92	95	84	89	85	100	87	100
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

Table S34 **Whether Company Uses Various Methods for Recruiting Apprentices and Trainees Base: Conduct Structured Training Programs, Number of Apprentices and Trainees is too Low, are Recruiting for Apprentices and Trainees**

Q.: As part of this recruiting effort, has your company (READ EACH ITEM) in the last three months, or hasn't it?

Base	Total 9 %
PLACED AN ADVERTISEMENT IN THE LOCAL NEWSPAPER ANNOUNCING THE OPENINGS	
HAS	36
HAS NOT	64
NOT SURE	–
POSTED AN ANNOUNCEMENT OF THE OPENINGS OUTSIDE YOUR PLACE OF BUSINESS	
HAS	41
HAS NOT	59
NOT SURE	–
ASKED CURRENT EMPLOYEES TO RECOMMEND CANDIDATES FOR THE OPENINGS	
HAS	89
HAS NOT	11
NOT SURE	–
ADVISED LOCAL EMPLOYMENT AGENCIES OF THE OPENINGS	
HAS	37
HAS NOT	63
NOT SURE	–

Base	Total 9 %
NOTIFIED YOUR TRADE ASSOCIATION OF THE OPENINGS	
HAS	49
HAS NOT	51
NOT SURE	–
ADVISED LOCAL HIGH SCHOOLS AND VOCATIONAL AND TECHNICAL SCHOOLS OF THE OPENINGS	
HAS	81
HAS NOT	19
NOT SURE	–
SENT REPRESENTATIVES TO LOCAL HIGH SCHOOLS AND VOCATIONAL AND TECHNICAL SCHOOLS TO RECRUIT CANDIDATES PERSONALLY	
HAS	84
HAS NOT	16
NOT SURE	–

Table S35 **Number of Apprentices and Trainees Company Would Want to Hire if Business Returns to the Levels of 1977 and 1978 (Mean)**
Base: Conduct Structured Training Programs

Q.: If business conditions improved to the levels of 1977 and 1978, given your present plant and equipment capacity and what you know about the number of employees who will be retiring shortly, how many prentices and trainees would you want to hire to handle this increase in business?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	354	27	26	48	43	34	61	115	42	148	64	30	61	101	27	205	21
NUMBER OF APPRENTICES AND TRAINEES	5.6	8.3	–	6.7	–	10.0	–	4.3	1.0	4.3	4.0	10.0	14.0	7.0	–	4.8	–

Table S36 **Number of Apprentices and Trainees Company Would be Able to Hire if Business Returns to the Levels of 1977 and 1978 (Mean)**
Base: Conduct Structured Training Programs

Q.: And how many apprentices and trainees do you think you would be able to hire?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	354	27	26	48	43	34	61	115	42	148	64	30	61	101	27	205	21
NUMBER OF APPRENTICES AND TRAINEES	5.7	10.9	12.3	6.8	4.7	3.0	12.4	3.7	2.8	3.4	6.6	5.1	23.5	4.6	5.9	5.7	9.5

Table S37 **Quality of Recent Apprentices and Trainees Compared With Five Years Ago**
Base: Conduct Structured Training Programs

Q.: Overall, how would you rate the quality of your company's recent apprentices and trainees compared to five years ago – is the overall quality of recent apprentices and trainees higher, lower, or about the same?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	352	27	26	47	42	34	61	115	41	148	64	29	61	100	27	204	21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
QUALITY IS HIGHER	41	33	24	38	32	46	30	44	43	43	43	30	35	36	67	38	42
QUALITY IS LOWER	21	25	18	22	13	23	18	23	18	22	24	14	16	24	10	21	27
QUALITY IS ABOUT THE SAME	32	37	52	37	49	20	43	28	25	31	30	49	48	28	23	36	31
NOT SURE	6	5	6	–	4	11	9	5	13	4	3	5	1	12	–	5	–

Table S38 **Difficulty Recruiting Qualified Candidates for Apprentice and Trainee Positions**
Base: Conduct Structured Training Programs

Q.: In the last few years, how much difficulty has your company faced in recruiting what you consider to be qualified candidates to become apprentices and trainees – a great deal of difficulty, some difficulty, not much difficulty, or no difficulty at all?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	353	27	26	47	43	34	61	115	41	148	64	30	61	101	27	204	21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
A GREAT DEAL OF DIFFICULTY	22	4	15	30	20	26	19	24	26	21	30	18	7	27	23	19	34
SOME DIFFICULTY	28	59	58	43	33	14	34	23	23	30	20	28	42	31	31	27	17
NOT MUCH DIFFICULTY	29	18	18	12	25	37	26	31	25	30	25	36	32	19	29	33	39
NO DIFFICULTY AT ALL	20	19	9	9	22	23	17	21	22	19	23	18	19	22	17	20	10
NOT SURE	1	–	–	3	–	–	4	1	3	*	2	–	–	1	–	1	–

*LESS THAN 0.5%.

Table S39 **Reasons for Difficulty Recruiting Qualified Candidates**
Base: Conduct Structured Training Programs, Have had a Great Deal or Some Difficulty in Recruiting Qualified Candidates

Q.: Thinking only about your own company, would you say that (READ EACH ITEM) is a very important reason, somewhat important, not very important, or no reason at all for the difficulty your company has had in recruiting qualified candidates?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Cast-ing	NSMPA/ Screw Ma-chine	AMSA/ Metal Stamp-ing	Tool and Die In-sti-tute	NMTBA/ Tool Build-ers	NTMA/ Tool-ing and Ma-chin-ing	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	187	16	17	36	23	13	29	53	21	83	35	13	29	62	16	97	12
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
GOOD CANDIDATES BEING ABLE TO GET HIGHER WAGES IN OTHER KINDS OF WORK																	
VERY IMPORTANT REASON	43	41	54	39	34	69	34	42	41	40	42	54	47	40	31	48	35
SOMEWHAT IMPORTANT REASON	30	32	25	50	43	12	36	26	39	30	30	38	15	33	33	25	47
NOT A VERY IMPORTANT REASON	15	14	17	7	7	12	22	18	14	17	9	3	30	15	15	18	8
NO REASON AT ALL	11	13	4	3	12	8	9	15	6	12	20	5	8	11	21	10	10
NOT SURE	*	–	–	–	4	–	–	–	–	1	–	–	–	1	–	–	–
LOCAL HIGH SCHOOLS ENCOURAGING STUDENTS TO GO TO COLLEGE INSTEAD OF TRAINING FOR A TRADE																	
VERY IMPORTANT REASON	33	30	42	29	30	33	35	34	40	29	42	27	29	41	60	27	4
SOMEWHAT IMPORTANT REASON	26	32	33	16	12	25	24	29	29	24	22	32	24	20	13	28	52
NOT A VERY IMPORTANT REASON	18	16	13	32	23	8	20	17	8	24	11	24	21	11	16	21	35
NO REASON AT ALL	17	17	4	23	30	27	21	13	15	18	17	17	20	15	11	22	–
NOT SURE	6	4	8	–	6	8	–	8	8	5	7	–	7	13	–	2	10

(Continued)

Table S39 (Continued) **Reasons for Difficulty Recruiting Qualified Candidates**
Base: Conduct Structured Training Programs, Have had a Great Deal or Some Difficulty in Recruiting Qualified Candidates

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NTMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	187	16	17	36	23	13	29	53	21	83	35	13	29	62	16	97	12
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
THE PERCEIVED LOW PRESTIGE OF WORKING IN A PLANT ON THE PART OF CANDIDATES TO BECOME APPRENTICES AND TRAINEES																	
VERY IMPORTANT REASON	20	25	42	28	27	24	12	18	13	16	28	29	38	21	22	20	12
SOMEWHAT IMPORTANT REASON	33	38	21	25	26	21	41	36	39	31	33	17	35	33	41	34	24
NOT A VERY IMPORTANT REASON	24	13	29	29	26	28	27	22	16	32	19	38	15	20	25	26	27
NO REASON AT ALL	17	20	8	16	20	19	21	15	21	18	10	13	12	16	12	17	27
NOT SURE	4	4	–	2	–	8	–	7	11	2	5	3	–	9	–	2	10
INADEQUATE RECRUITING EFFORTS ON THE PART OF YOUR COMPANY																	
VERY IMPORTANT REASON	7	–	4	–	11	8	3	10	16	1	7	9	6	10	4	7	–
SOMEWHAT IMPORTANT REASON	29	28	33	35	40	25	38	24	29	31	28	34	29	33	27	28	24
NOT A VERY IMPORTANT REASON	20	17	29	37	6	24	19	18	16	25	18	13	18	20	18	21	15
NO REASON AT ALL	43	49	25	28	44	44	40	46	38	41	42	45	45	38	52	43	51
NOT SURE	1	–	8	–	–	–	–	1	–	1	5	–	–	–	–	1	10

(Continued)

Table S39 (Continued) **Reasons for Difficulty Recruiting Qualified Candidates**
Base: Conduct Structured Training Programs, Have had a Great Deal or Some Difficulty in Recruiting Qualified Candidates

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	187	16	17	36	23	13	29	53	21	83	35	13	29	62	16	97	12
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
RACIAL OR ETHNIC PREJUDICE ON THE PART OF YOUR COMPANY'S CURRENT WORKERS																	
VERY IMPORTANT REASON	2	–	–	–	–	–	–	4	8	–	–	–	–	–	–	3	–
SOMEWHAT IMPORTANT REASON	4	9	–	10	7	–	6	2	6	–	13	12	4	2	–	6	5
NOT A VERY IMPORTANT REASON	20	19	8	30	23	24	31	16	18	19	23	23	32	20	31	19	29
NO REASON AT ALL	74	72	92	57	69	76	63	78	68	81	62	65	64	77	69	72	71
NOT SURE	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–

*LESS THAN 0.5%.

Table S40 **Whether the Company has Hired From Government – Sponsored Job Training Program**

Q.: Have you ever hired a new employee from a government-sponsored job training program for the economically disadvantaged, such as CETA (Comprehensive Training and Education Act), or haven't you?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	798	95	47	91	101	98	146	220	146	328	130	63	108	208	70	470	50
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
HAVE HIRED FROM SUCH PROGRAMS	37	44	30	49	38	21	42	39	28	38	49	37	54	48	33	31	53
HAVEN'T HIRED FROM SUCH PROGRAMS	61	52	70	50	55	77	52	61	72	59	51	60	40	48	65	67	46
NOT SURE	2	4	–	–	7	2	5	*	*	3	–	3	6	3	2	2	1

*LESS THAN 0.5%.

Table S41 **Percentage of Employees Hired From Government – Sponsored Job Training Programs That are Still With the Company (Mean)**
Base: Have Hired From Government-Sponsored Job Training Programs

Q.: What percentage of the new employees you've hired from such programs in the last five years are still with your company today?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Mid-west	West
BASE	323	42	15	44	38	26	68	90	43	129	63	24	56	110	22	168	23
PERCENTAGE OF NEW EMPLOYEES	23.6	29.1	21.3	15.0	15.3	42.8	24.2	22.3	15.5	23.5	34.0	30.6	32.9	25.9	8.6	27.0	11.3

Table S42 **Average Hourly Wage for Skilled Journeymen With Ten Years of Experience (Mean, in Dollars)**
Base: Conduct Structured Training Programs, Have had a Great Deal or Some Difficulty in Recruiting Qualified Candidates

Q.: What is the average hourly wage for a fully skilled journeyman at your company with ten years of experience in the trade?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
AVERAGE HOURLY WAGE	9.79	8.60	6.70	7.60	8.70	11.70	8.74	10.01	9.52	9.67	9.52	8.96	9.01	9.13	8.61	10.21	10.16

Table S43 **Percentage of Skilled Journeymen 55 Years Old or Older (Mean)**

Q.: What percentage of your company's skilled journeymen are 55 years old or older?

		Association							Number of Plant Employees					Region			
	Total	SPI	ADCI/ Die Casting	NSMPA/ Screw Machine	AMSA/ Metal Stamping	Tool and Die Institute	NMTBA/ Tool Builders	NTMA/ Tooling and Machining	1-10	11-40	41-70	71-100	More Than 100	East	South	Midwest	West
BASE	800	95	47	92	101	98	147	220	146	329	130	63	108	209	70	471	50
PERCENTAGE OF SKILLED JOURNEYMEN 55 YEARS OLD OR OLDER	12.8	10.8	16.1	11.1	24.6	12.2	16.4	10.4	10.2	11.1	21.9	15.7	21.0	14.0	9.0	13.3	10.7